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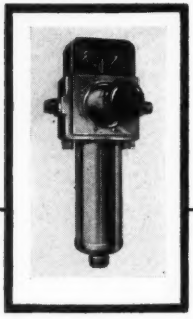

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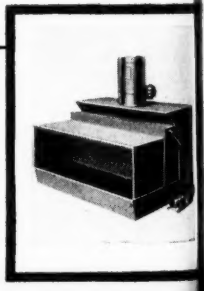


AT ITS BEST

Products finishing

# Take Advantage of Conveyorized Efficiency

No basic principle is more important in the economical, high quality processing of parts in the finishing department than that of efficient methods of product handling. Unusual compactness and utility of floor space are prime requirements of modern materials handling equipment for the finishing room. Proper thought and consideration given to a highly efficient system of conveyorizing in finishing operations can make the difference between profit and loss, high and low quality finishes, and steady dependable production or irregular unpredictable production. Furthermore, the dividends paid on efforts to install efficient product handling systems are just as important in the small shop as in the large factory departments.

The use of conveyor systems for finishing products is no novelty in many large plants, and this type of equipment is now being introduced in increasing amounts in small plants because of the economies afforded. Modern conveyor finishing systems vary widely in complexity, depending upon the process. Any of the steps of the finishing process may be carried out manually and the remainder handled by the conveyor, or the conveyor may be used throughout the entire process. In any case, where the system is applicable, a general saving of time and a greater uniformity of output exist.

The movement to eliminate all factors which might make the finishing room a potential production bottleneck in manufacturing operations has been of major importance in the finishing industry for several years. It has, naturally, been of great interest to metal product manufacturers; the manufacturers of finishes have responded by turning out improved "high speed" finishes in rapid succession, while production engineers have devised new methods of conveyorizing to keep the stream of products flowing continuously through the finishing room.

AUGUST, 1947 Vol. 11, No. 11

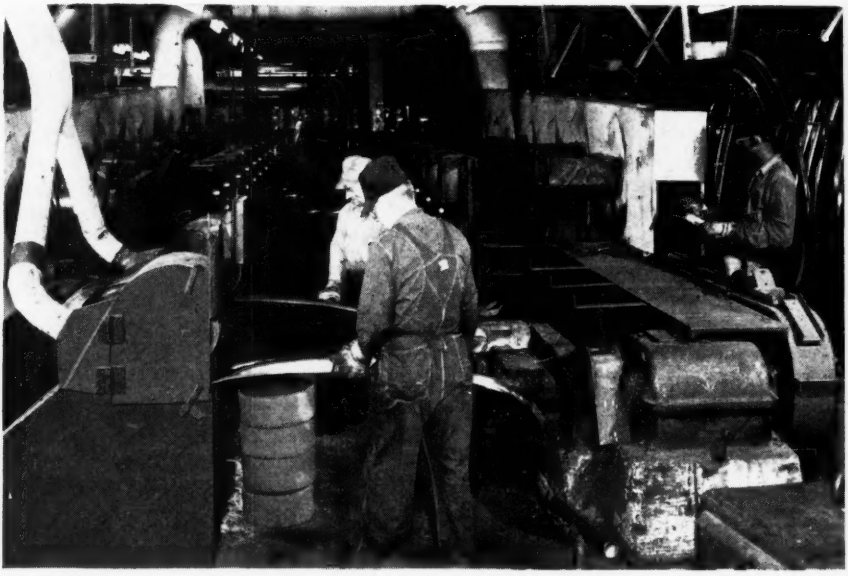
# CHEVROLET Increases Nickel Plating on Bumpers

By LARRY STRONG AND H. F. REVES

DURING the war years, when large quantities of nickel were allotted to the production of alloy steel, practically all manufacturers were forced to cut down on its use for plating purposes. As a result, the thin coatings of nickel plating which were applied to automobile bumpers and grilles permitted quick rusting of these parts. Thus, one of the first postwar improvements made at the Chevrolet Forge, Spring and Bumper Division, General Motors Corporation, Detroit, was the expansion of its electroplating department so as to provide for heavier deposition of nickel coatings.

Chevrolet has now adopted practices whereby the minimum thickness of the plating on bumpers is tripled as compared with previous specifications. Bumper production operations begin in the Spring plant, where the steel (S.A.E. 1085) arrives on freight cars

Fig. 1—After heat treating and pickling, the bumpers are polished on automatic polishing jacks, as shown herewith. Loaded on the conveyor at the right, the bumpers are conveyed through four automatic polishing machines equipped with weighted polishing wheels for removing blemishes. The two workers in the foreground are touching up the curved ends of bumpers not reached by the automatic polishers.



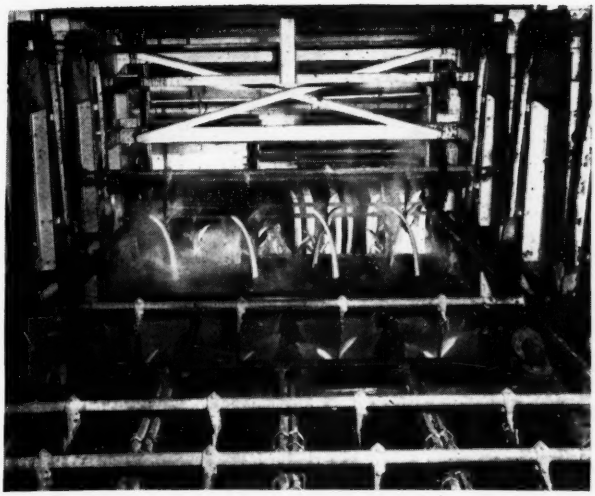


Fig. 3 — From the nickel plating tank shown in the immediate foreground of this illustration, conveyors transport the plated bumpers to the spray tank just beyond and then to the hot rinse tank shown in the background. The operator in the background is transferring the bumpers from the plating tank carriers to a conveyor which transfers the bumpers to the buffing room and then to the chrome plating installation.

in single and double strips. Using a Toledo press, bumper blanks are stamped out of the steel strips and each blank is pierced with five holes in one operation. As the blanks are produced, they are fed into a continuous cycle Holcroft furnace having a walking beam type hearth for heating the blanks to 1,500 deg. F. for forming.

The heated blanks drop out of the furnaces one at a time, and are placed on a forming die. Since all Chevrolet bumpers are of standard shape, a smooth conveyorized operation is obtainable. The one exception is a special style bumper for the sedan which has an inset in the center of its length. This bumper is formed in another die; otherwise, the operations are the same.

The formed blanks are now placed on a platform type conveyor which

Fig. 2 — This illustration provides a view of the department used for resurfacing the wheels employed in polishing bumpers. Glue is applied to the wheels by the operator at the left, following which they are rotated against polishing grit contained in the circular tray shown. The wheels are then baked in the oven shown in the background, after which they are stored in an air-conditioned room.

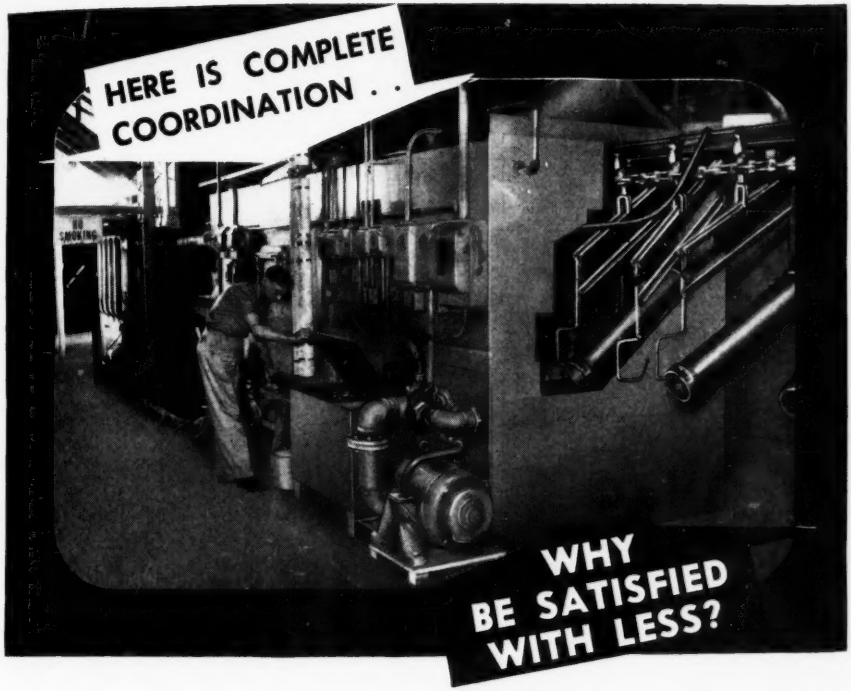
Fig. 4 — This illustration provides a view of the finishing end of the chrome plating installation. The rack in the background is shown emerging from the plating tank; the rack in the foreground is being used to lower the chrome plated bumpers into a spray wash. After spray washing, the bumpers are immediately unloaded and transferred to a conveyor which carries them to an aluminum paint spray booth and then to the shipping room.

carries them through a cooler so that they can be handled at the heat-treating installation. In this installation, the blanks are heated to 1,525 deg. F., and then placed in fixtures which maintain the contour of the bumpers as they are quenched in oil. Following quenching, the bumpers are given a tempering treatment by passing through a draw furnace operated at 1,000 deg. F., after which they are conveyed from the Spring plant to the plating department.

In the plating department, the bumpers are first pickled and washed to remove scale, oil, and dirt. The bumpers are then moved on a monorail conveyor to the polishing room, where the curved ends are rough polished by hand. Following this they are conveyed to four automatic polishing machines, each equipped with 14 weighted polishing wheels, where the entire center length of each bumper is polished with varying degrees of grit and finally "oiled out" or given a smoothing finish, as shown in Fig. 1. From the automatic polishers, the bumpers are conveyed to a battery of polishing stands where the ends are finish polished and touched up by hand. The polishing wheels used are grooved to the contour of the bumpers. As shown in Fig. 2, a separate department is maintained for gluing and resurfacing the many wheels used in the polishers, and surplus wheels are numbered and stored in an air-conditioned stockroom.

Two parallel Meaker units of the automatic type are used for the nickel plating process. Each unit is provided with a conveyor system which automatically transports the bumpers through the unit, as shown in Fig 3. The sequence of operations in each unit is as follows: (1) mechanical wash, (2) electric clean, (3) cold rinse, (4) acid dip, (5) cold rinse, (6) second cold rinse, (7) immersion in cyanide solution for copper plating, (8) cold rinse, (9) second cold rinse, (10) nickel plate, (11) cold rinse, and (12) final hot rinse. Each bumper is thoroughly dry as it leaves the plating unit.

The above sequence of operations produces a nickel coating of 0.0015 inch, resulting from a cycle of 1½ hours' duration in the nickel plating unit. Since the time is the principal criterion in electrodeposition, the chemical laboratory has conducted considerable research to establish the most economical balance of pH of the nickel solutions, control of current density and control of temperature. A

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complete chemical analysis of each solution in the plating process is made twice a week.

Each of the nickel plating units is served by four motor generator sets, each having an output of 15,000 amperes. The nickel plating solution is a mixture of 42 oz. per gal. of nickel sulphate, 4 oz. per gal. of boric acid, and 4 oz. per gal. of nickel chloride. The solution is maintained at a temperature of 140 to 150 deg. F., and the pH is maintained around 2.1. The current density is held at 62 amperes per square foot.

After nickel plating, the bumpers enter the buffing room where the entire center area of each bumper is buffed in one operation by means of automatic buffing machines. The bumpers are then transferred to individual stands for hand buffing and touching up the curved ends, after which they are ready for chromium plating.

The principal feature of the nickel plating procedure is the introduction of increased plating capacity in the form of longer tanks. The chrome plating equipment remains the same—the original Hanson-Van Winkle-Munning installation, as shown in Fig. 4. The sequence of operations in the chrome plating installation is as follows: (1) electric clean, (2) cold rinse, (3) acid dip, (4) cold rinse, (5) chromium plate, (6) cold rinse, and (7) hot rinse.

The cycle in the chromium plating installation is of approximately 12 minutes' duration, producing the usual "flash" coating of about 0.00001 inch in thickness. The plated area of the bar is approximately 6.2 square feet.

Upon leaving the plating department, the bumpers are transported into an adjacent room on a monorail conveyor and then to a water-wash spray booth where the inside area of each bumper is sprayed with aluminum paint, as illustrated in Fig. 5. As the bumpers move out of the spray booth, the outer sides are cleaned with a cloth and water. Continuing on the monorail, the bumpers are conveyed to an overhead gas-fired oven for baking the aluminum paint. As they emerge form the oven, they are ready for packing, as shown in Fig. 6. Instead of the paper crates shown in the illustration, metal crates are now used in packing bumpers to afford better protection during shipment to Chevrolet assembly plants and parts warehouses.

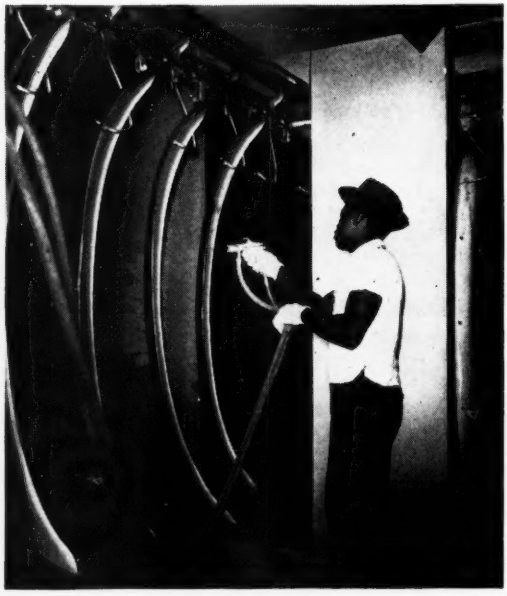

Fig. 5—Located in a corner of the shipping room, the spray booth shown herein is used in applying a coat of aluminum paint to the underside of each bumper.

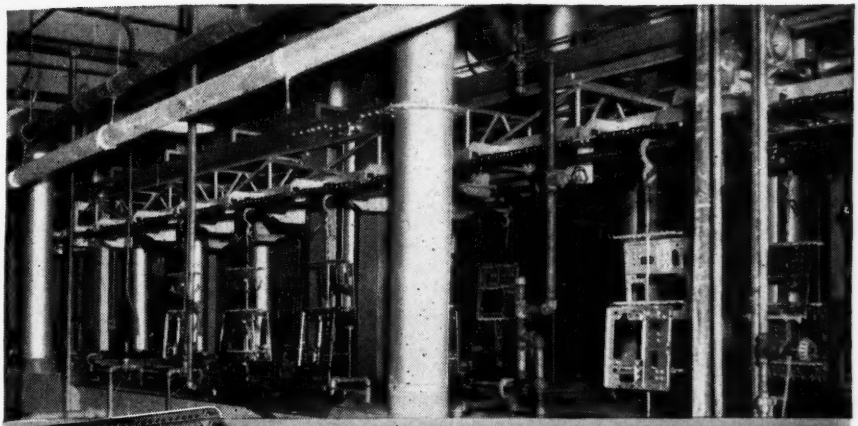

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Fig. 6—This illustration affords a view of the shipping room at Chevrolet's Forge, Spring and Bumper plant. Bumpers, emerging from the chrome plating room at the right, move to the rear of the department where they are cleaned and receive a coat of aluminum paint, after which they are conveyed to an overhead baking oven and returned for final inspection and packing.

The plating department is served by a central filtering room containing a group of filter presses, one for each type of chemical solution.

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**Durco Top Lubricated Plug Valves.** A bulletin released by The Duriron Co., Inc., Dayton 1, Ohio, provides complete details on the Durco corrosion-resistant top lubricated plug valve made of Duriron or Durichlor. A cutaway view of the valve shows which parts are made of the corrosion-resistant high-silicon iron, and the principle of operation is explained in the text. The bulletin includes a list of the operating features of the valve, an illustrated parts list, and engineering and dimension data on all seven sizes in which the valve is available. Copy of Bulletin 617 free upon request.

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**"Ucilon,"** an organic coating material especially formulated from new and improved synthetic resins to provide extremely high resistance to the widest variety of corrosive influences, is discussed and its application in various industries illustrated and described in a four-page folder issued by United Chromium, Inc., 2751 E. Jefferson Ave., Detroit 7, Mich. Copy free upon request.

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**Titeflex Filter** for paint, varnish, and lacquer industries, plating industries, and so on, is illustrated and described in a four-page folder published by Titeflex, Inc., 422 Frelinghuysen Ave., Newark 5, N. J. Also described and illustrated is the Titeflex all-stainless laboratory filter. Copy free upon request.

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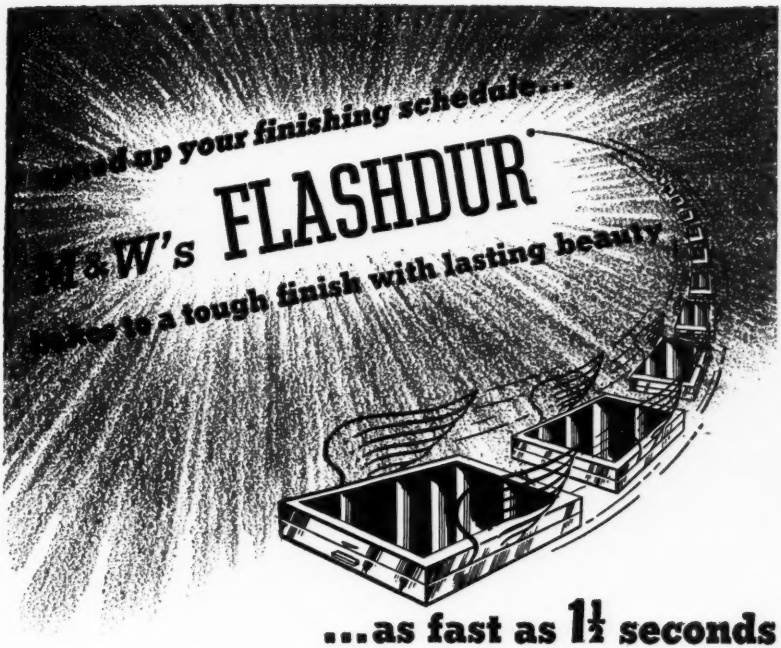
**"How to Select Coatings for Aluminum"** is discussed in an article by Ray Swan and N. P. Ruther of the research staff of The Watson-Standard Co., 225 Galveston Ave., Pittsburgh 12, Pa. The article deals with aluminum castings, extrusions, forgings, sheets, and foil and considers both functional and decorative coatings. Copy free upon request.

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# Barrel Finishing of Metal Products

## Part 12—Factors in the Barrel Finishing of Light Specific Gravity Parts

By H. LEROY BEAVER
Barrel Finishing Consultant
Lansdale, Pennsylvania

WE do not know whether problems concerning the barrel finishing of various metal products operate in cycles or whether it is a simple coincidence that seemingly brings a host of problems within a short period of time, all relating to operations on one specific metal. The reason that impels us to the current discussion is that in the month of June alone nine separate problems have been submitted concerning the barrel finishing of aluminum, three concerning castings and six concerning stampings.

In each and every one of these problems the operator has sought to barrel finish aluminum castings or stampings in conventional types of barrels and with steel burnishing materials. In some cases balls only were used and in others balls and formed pieces combined. In every instance the operator obtained results that were completely discouraging.

In one of the most interesting of the cases presented relating to the barrel finishing of small parts blanked from strip material, the operator frankly expressed himself as being completely "stymied", so far as satisfactory results were concerned. In writing to him personally we very frankly confessed that even after thirty odd years of experimental work we, too, felt ourselves in much the same spot with the addition, to use golfing terms, that some unthinking persons in the foursome preceding us had unintentionally permitted at least two divots to act as additions to the original "stymie". In other words, we have always been willing to confess ourself to be more or less "licked" by this problem of the securing of satisfactory surface finishes on aluminum parts whether they be castings or parts blanked from strip material.

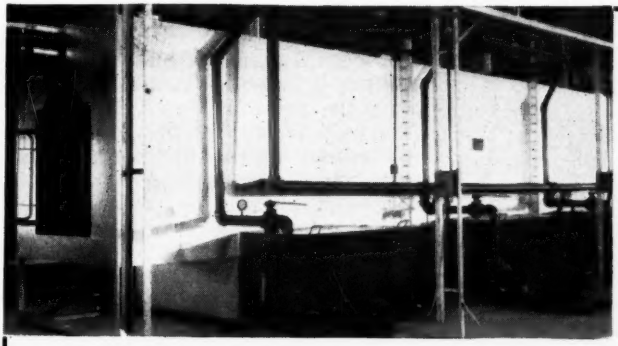
To those who have so faithfully followed this series of discussions from its beginning back in 1937, the reader will remember that we have said little or nothing concerning the barrel finishing of aluminum parts and that all of our experimental work has been on other metals, specifically on those metals whose specific gravity has been more than, or at least reasonably comparable to, a specific gravity of 4.9 which is that of the average burnish-

ing mass composed of steel materials.

Insofar as the lighter metals are concerned we have always felt that they should more properly be considered, with regard to barrel finishing procedure, along with other light specific gravity materials such as plastics. The same methods for removing surface area from plastic parts, if properly applied, would also be applicable to the removal of surface area from aluminum parts due to the fact that a closer relation in specific gravity exists between aluminum and plastics than any of the other metals on which we have experimented.

In plastics, for example, the range of specific gravity, depending on the type and weight of fillers used, varies from 1.27 to around 1.45 which would show a mesne of 1.33. Aluminum in the form of castings has a specific gravity of 2.583, but when used in the form of parts blanked from strip material, due to the rolling process which apparently increases the density of the material, it has a specific gravity of 2.67. Now if you will keep in mind the range of specific gravity of plastic parts which was from 1.27 to 1.45 and then consider this along with aluminum with a specific gravity of 2.583 and 2.67 and then consider in relation to them the average specific gravity of a steel burnishing mass which is 4.9, and if you will consider these variations purely in the light of our understanding of the mechanics of the operation, that alone should explain the reason why we do have difficulty in processing the light specific gravity materials.

We will discuss the average "load" or "mass" as it is variously termed by operators and by this we mean the steel balls or steel shapes operated in the barrel exclusive of the parts to be finished. Of this we may say that the mass, though mobile, is not liquid, even though when in operation it flows in

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much the same manner as a liquid. It exerts great pressure both when at rest and when in motion. You will find this to be quite true if you attempt to force your hand to the bottom of the load of materials in any average barrel. Now in this mass, parts made of plastics or of aluminum, or like articles whose specific gravity is materially less than that of the burnishing mass, do not burst to the surface of the mass by reason of any buoyancy on their own part, but are impelled to the surface of the mass by the forces which are produced within the mass during rotation.

There are many forces operating on the articles being finished in the mass which, at a given instant, in mechanical parlance, are resolved into one final or resultant force. It is this force, the resultant of all forces, which impels plastic or aluminum parts to the surface, and they are never again able to regain a position within the mass.


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The light specific gravity parts are unable to resist the action of the resultant force because of insufficient inertia. If they had a greater specific gravity, at least reasonably comparable to the specific gravity of the mass, hence a greater inertia, they would be correspondingly better able to resist this force. Any metal parts under processing in a barrel and whose specific gravity is equal to or greater than 4.9 due to their greater specific gravity would be able to resist the action of the resultant force and hence to retain their position within the mass itself. The specific gravity of an article being finished, or, to put it in other words, the inertia of an article is a factor in its resistance to the force trying to dislodge it.

It might be recalled that in any discussion we have had with regard to the relation of specific gravity we have always pointed out one possible exception which is the case where hollow or cup shaped articles might be in process, and in some of these cases, as soon as the parts are placed within the mass they fill with the steel materials constituting the mass and thereby their specific gravity is not that of the part alone, but the resultant of the specific gravity of the cup shaped part and of the finishing mass within the cup. This resultant specific gravity is greater than that of the mass in a material and merely a small amount will contribute substantially to retaining the article in the mass during the cycle of rotation of the barrel.

The extent of the resistance of the inertia of an article to the force of dislodgment is one of degree, dependent upon the extent of the force and of the inertia. Even a slight addition to the inertia of the articles to be processed may sway the result in favor of the articles as against the resultant force and thereby preserve the position of the articles in the mass.

We do know that in every instance

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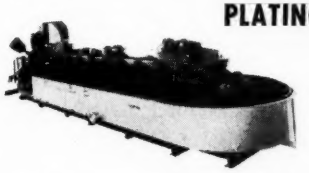

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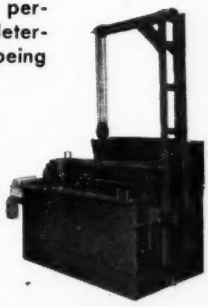

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Toronto, Ontario

where we have conducted tests and where we have disregarded this relation of specific gravity, the result has always been the same so we do not hesitate to say to you that the theory of the relative specific gravity of the article to be finished and of the finishing mass is a demonstrated scientific fact.

There is one school of thought in barrel finishing procedure that disregards the relation of the specific gravity of the parts to that of the mass, by insisting that a proper solution of the barrel finishing of aluminum parts problem, whether cast or stamped, is to greatly accelerate the speed of the barrel so that the parts and mass are thrown about in all directions and that by this method a satisfactory finish can easily be obtained in very short operating cycles, or in lieu of that to use a barrel with an oscillating motion which after all produces much the same results. This, we very frankly question. We have experimented with parts by both methods and it would be stretching courtesy completely to the nth degree to call the the results a finish. To make use of a quite common expression we did manage to completely "louse" up a lot of perfectly good aluminum castings and stampings, at least to such an extent that we did not have the courage to submit them to the manufacturers presenting the problems. Some perhaps might have termed the results a "finish," and considered it as entirely satisfactory according to their own lights, and we suppose that by reason of the thousands of tests we have made we have really become hypercritical of the results secured, but we could never, either in this instance or in any other instance where high barrel speeds were adopted, reconcile ourselves to defying the laws of mechanics, and to undertaking to describe the results as a "finish."

In such a situation as the above, the finish such as it is would and could be secured only by impact, the most undesirable manner, as compared to a finish secured by constant pressure exerted on the articles all during the time such articles were held in suspension in the burnishing or finishing mass. This is true whether the operation is one of surface removal or of surface polish or burnish. We do not now nor will we ever in the light of our own experiences ever consider a barrel finish that is secured by impingement to be anything but the least satisfactory.

Let us examine the term impingement a bit. Funk and Wagnalls define it as:

> "To come into physical contact with an object after motion; to strike; to impinge on, upon or against."

However, in mechanics we have a somewhat more comprehensive definition which might read as follows:


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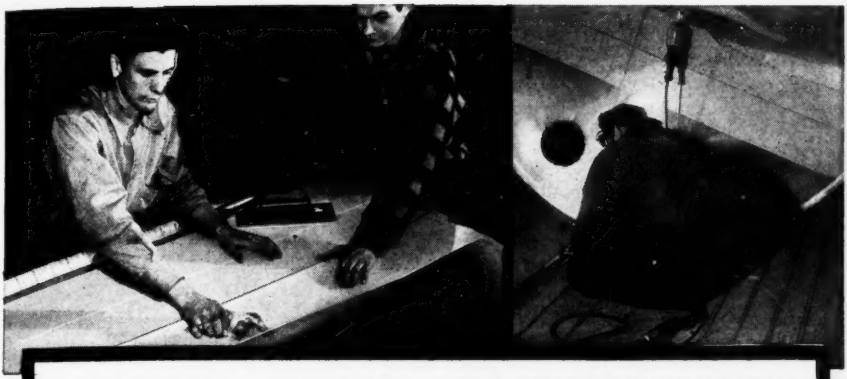
**BEACH feather weight AIR BRUSHES featuring the exclusive, outstanding INTERNAL MIXTURE NOZZLE**

requiring lower air consumption and capable of spraying solutions of all consistencies perfectly. Beach featherweight air brushes are designed and constructed to speed finishing operations *economically*. We carry a complete line of all-purpose paint and lacquer spray equipment, including hoses, tanks, compressors, etc. Consult us concerning any finishing problem. Write for literature.

*"Established a Quarter of a Century"*

**BEACH AIR BRUSH CO., 155 Warren St., Harrison, N. J.**



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**"SCOTCH" Extra Strength Masking Tape in the 8-inch width, is applied to the steel sheets before they are removed from the crate and remains on during all fabrication operations. Complete protection is provided against the scuffing of workmen's shoes and possible scratching by the compressed air lines, welding and grinding tools dragged over it.**

**When fabrication is completed "SCOTCH" Extra Strength Masking Tape—Low Tack—strips off readily, leaving the surface of the steel bright and unmarred.**

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**SCOTCH** BRAND
EXTRA STRENGTH *Masking* **TAPE**
LOW TACK

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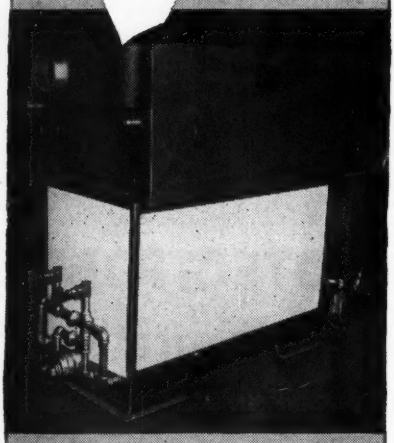
PLUS ADVANTAGES!



1 EXPERIENCE-DESIGNED
2 JOB-ENGINEERED
3 ECONOMY OPERATED

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The D'OILER Vapor Spray machine, illustrated above, can be used as a vapor-spray, or a straight vapor degreasing unit. Drain table recaptures dragout from basketed parts . . . all-around insulation reduces heat losses . . . exhaust duct on two sides safeguards operator . . . pump drive for standby solvent eliminates hand pouring.

Every D'OILER type is built to do a specific job . . . is designed with the "on-the-job experience" necessary to provide a degreaser that does the work, in the required volume, economically.

Our engineers will gladly advise on degreasing problems; your inquiries will receive prompt attention. Write today.

Mechanical
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"A pressure of short duration exerted between two bodies." The efforts of impact or impingement are sometimes an alteration of the distribution of actual energy between the two bodies, and always a loss of a portion of that energy, depending on the imperfection of the elasticity of the bodies in permanently altering their figures and producing heat. The determination of the distribution of the actual energy after collision and of the loss of energy is effected by means of the following principles:

1. The motion of the common center of gravity of the two bodies is unchanged by the collision.
2. The loss of energy consists of a certain proportion of that part of the actual energy of the bodies which is due to their motion relative to their common center of gravity.

Unless there is some special reason for using an impact or impinging motion in barrel finishing procedure, it ought to be avoided not only because of the waste of energy which it causes but from the damage it occasions to the parts or materials in process.

Perhaps we can gain something of an insight in what might be done on the lighter specific gravity materials by examining a part of barrel finishing history with which we are not too familiar but which is not new in any sense. Plastics of all kinds now commercially being compression molded, cut, sliced, or turned are, at least as far as their years are concerned, a comparatively new product in our American production field. And what did we have prior to that in the field of the production especially of buttons and parts of that character? If you would examine into this, even casually, you would find a field of men well informed in what was then and still is classed as the vegetable ivory, bone, and pearl shell field and by that we

# MOST

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Industrial Finishes Division
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*Leading 1947*
*Western Furniture Markets!*

**LOS ANGELES**
**FURNITURE MARKET**
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**SAN FRANCISCO**
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**August 4-9, 1947**

Of all Western Exhibitors at these two Furniture Markets, users of FULLER INDUSTRIAL FINISHES show the following majorities:—

| Western Manufacturers by furniture types | FULLER CUSTOMERS Number of Exhibitors | Percentage of Exhibitors |
|---|---|---|
| BEDROOM | 14 out of 21 | 66.6% |
| DINING ROOM | 9 out of 12 | 75.0 |
| EARLY AMERICAN | 3 out of 4 | 75.0 |
| EARLY CALIFORNIAN | 4 out of 5 | 80.0 |
| MODERN | 8 out of 11 | 72.7 |

FULLER • *Industrial* • FINISHES

*Products of* **FULLER-NASON** *Research*

mean that parts made from these materials were and still are barrel finished. Vegetable ivory as such is nothing more or less than a product known as corazo nut, grown in Central America. For many years most of the buttons used on men's clothing were made from discs turned from these vegetable ivory nuts, these in turn being ground down to a smooth surface and then polished and all by barrel methods. With the advent of plastics, buttons and such parts could be produced at much lower costs than the kinds processed from the nuts and it was quite logical that those familiar with the barrel finishing of ivory, shell, and bone should turn their attention to the barrel finishing of plastics.

Now all of you will realize that for one individual working entirely as a "free lance" the determination of problems in barrel finishing procedure relating solely to parts reasonably comparable to the specific gravity of the average steel balls and steel shapes as used in barrels would provide quite enough of problems, which in truth it has, to leave much time to invade the field of the ivory, bone, and shell group, even though the same underlying principles apply. As in many steel parts, depending on their shape, they may be used alone and as self-burnishers. This also applies to the non-metallic field, for due to the lighter specific gravity of these materials they would be more easily grouped with aluminum and should be finished in much the same way.

There has been some exploration in this field, and in those places where satisfactory results have been obtained, and complaint has been that the operating cycles were too long. Now this, of course, is predicated on a comparison with the operating cycles of steel burnishing materials acting on other metal products of reasonably comparable specific gravity. It must be remembered though that weight or pressure is a most important element. In the case of even the heaviest of the materials used on plastics and the parts of bone or shell, the maximum per bushel would hardly be more than from sixty to eighty pounds whereas when steel balls or shapes are used the average weight per bushel would be easily four hundred pounds. If you were to load your barrel with vegetable ivory chips to the extent of one bushel weighing sixty pounds and operate this on a load of parts you quite naturally would not expect as short an operating cycle as would be the case could you have used a like load of steel materials weighing four hundred pounds. Thus, whatever materials you choose to use, you may definitely expect to have longer cycles of operation per barrel of parts.

Of all of the finishes on aluminum that we have ever seen coming from barrel finishing procedure, none have compared with the electro-chemical

PEERLESS
ABRASIVE BELT SURFACER
Speed and quality in grinding flat surfaces of metal, wood, hard rubber, celluloid and plastics. Obtainable in both vertical and horizontal types—9", 14", 20" sizes.
Send for illustrated pamphlet.

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GREENFIELD • MASS.

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*for the surface treatment of metals*

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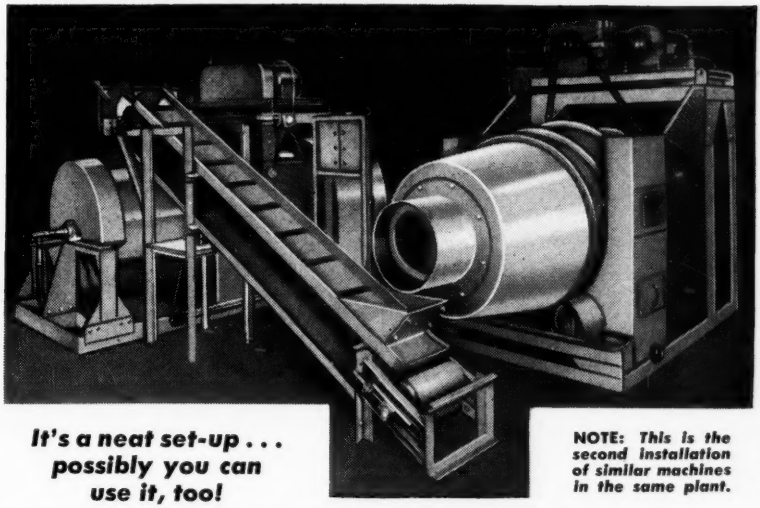
- DE-SCALING IN ONE BARREL
- BURNISHING IN THE OTHER BARREL

*BOTH SAVE YOU TIME AND MONEY*



***It's a neat set-up . . . possibly you can use it, too!***

**NOTE:** *This is the second installation of similar machines in the same plant.*

**FORGED wrenches are de-scaled in the barrel at the left and work is conveyed *automatically* into the burnishing barrel at the right. In BOTH barrels tumbling medium and burnishing balls are *automatically* separated from the work. You SAVE on expensive mediums . . . you SAVE on time and labor because NO MANUAL HANDLING IS REQUIRED.**

***Let RANSOHOFF Engineers call at your plant to discuss your cleaning problems.***

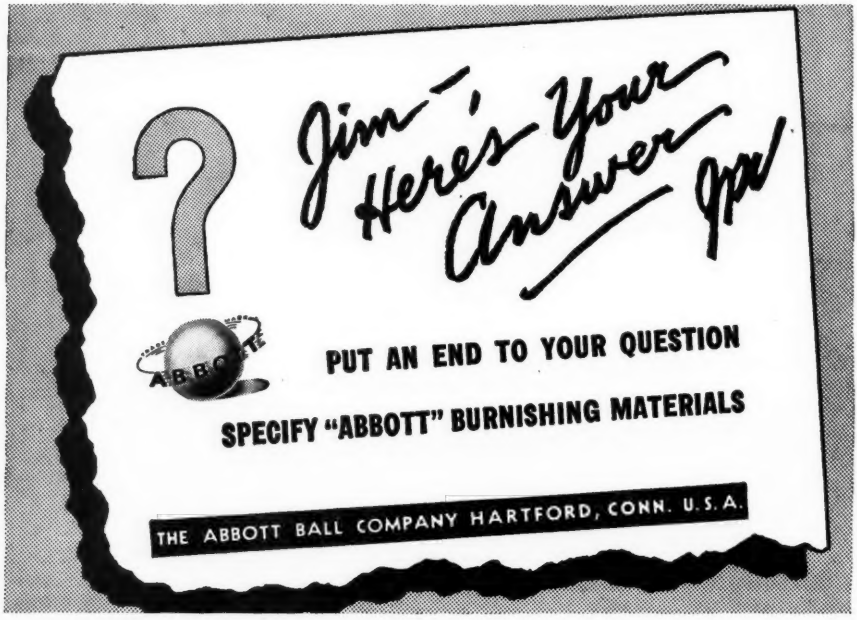
## N. RANSOHOFF, Inc.

**1311 TOWNSHIP AVE.** **CINCINNATI 16, OHIO**

finishes that have come from the Alumilite or other similar processes. It would be our studied conclusion that if the surface area of aluminum parts could be made reasonably smooth to permit electrolytic treatment, and if this surface could be secured by barrel finishing procedure, that this would suffice and that the subsequent operations to the "cutting down" cycles by electrolytic processes might well make for increased production at lower production costs.

We simply do not have enough time at our disposal to undertake a research on the lighter materials. We do have in this country, however, at least two men with years of experience in actual production and research in the barrel finishing of light specific gravity parts. Oldest in years and therefore in experience we would class Mr. Rudolph R. Siebert, 183 St. Paul Street, Rochester, New York, and Mr. Joseph Lupo, Jr., who directs the research work for Lupomatic Industries, Inc., 450 Bullard Avenue, New York City 66, New York, as two men best fitted by their experience to develop ways and means for the satisfactory barrel finishing procedures and the development of materials for barrel finishing aluminum parts.

Some of you will undoubtedly say, "Why didn't he say something about magnesium parts?" As to that, we are certain that we have never had any parts of that metal ever submitted to us for tests, and no record of anyone ever having asked us whether it may or may not be barrel finished. With its specific gravity of 1.734, all that we have said about the variation of specific gravity applies to magnesium and even more so than as to aluminum. We may not be correct in this, but we understand that The Dow Company are our largest producers of this metal, and it may be that they have developed some processes and materials whereby magnesium parts may be satisfactorily barrel finished.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Jim—Here's Your Answer
PUT AN END TO YOUR QUESTION
SPECIFY "ABBOTT" BURNISHING MATERIALS
THE ABBOTT BALL COMPANY HARTFORD, CONN. U.S.A.

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Among America's leading industries . . . and in foreign countries over the globe . . . GRIPMASTER leads the way to new profits from polishing. *Do this now.* AT OUR EXPENSE, discover for yourself how GRIPMASTER (with its secret high-heat resisting ingredient) can increase *your* production . . . give you far more pieces per head! Clip coupon below. Send for generous free sample *today!*

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FT-8

# Electrostatic Finishing Process Doubles Production at Delta Electric

By W. B. STEPHENSON
President and General Manager, Delta Electric Company
Marion, Indiana

SELDOM does a process hold as much interest for the manufacturer of metal products as the electrostatic spray-coat method of applying finishes, which has been adopted by many manufacturers and is now being employed on articles ranging from bicycle lamps to refrigerator cabinets. The experience of the Delta Electric Company, Marion, Indiana, shows that many benefits can be derived from the electrostatic spray-coat method of finishing material application. Probably the world's largest manufacturer of bicycle lighting and related equipment, Delta has doubled production on a number of the bicycle lamps and hand lanterns in its famous Delta line.

Several months ago, like in many other plants, production on a dozen Delta items depended upon how fast the finishing department could apply a coat of enamel and move the enameled parts out of the way and on to the final assembly line. Today,

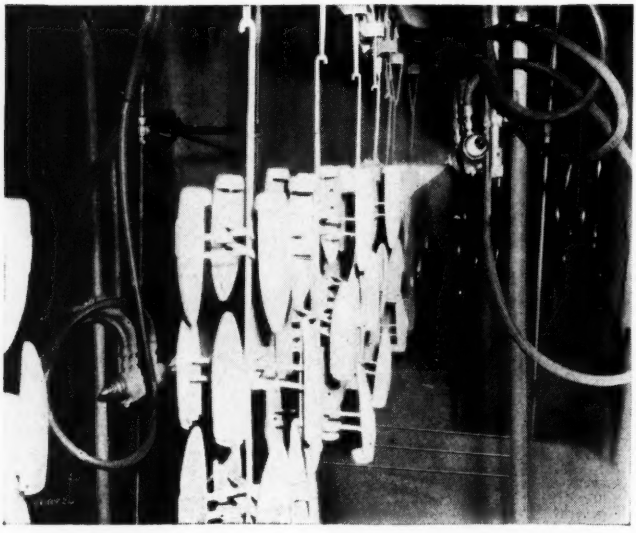

Fig. 1—The two spray guns and part of the electrode system can be seen in this close-up of the coating zone. The electrostatic field has increased paint mileage more than 50 per cent.

YOU CAN GET A LACQUER TO RESIST

WATER...

BUT WILL IT BE RUINED BY SWEAT?

**Unichrome Coatings offer you the Right Combination of properties for your product... every time!**

Air-drying lacquers seldom resist exposure and perspiration equally well. But often, that's just the combination you need for decorative hardware. The *right combination* also includes hardness, high gloss, extra adherence. Unichrome Coating A-112 supplies them all.

In fact, one lock manufacturer not only greatly improved his product with A-112's combination of properties, but actually saved production time. Its exceptional adherence eliminated his need for cleaning brass after buffing.

Whatever you make, chances are there's a Unichrome Coating that's *exactly right* for your product—for service requirements, for eye-appeal. It will pay you to look it up. Write us today on the properties you need in a coating, and we'll send you full information. No obligation, of course.

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**Products of UNITED CHROMIUM, INCORPORATED**

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an automatic electrostatic unit is being used to coat parts like those for PT (torpedo) bicycle lamps at the rate of 2,880 an hour, with a smooth, uninterrupted flow of production.

There are three inherent reasons for the efficiency and simplicity of the electrostatic process. One, it literally provides the means for painting around a curve. Two, it provides for the automatic application of an even-coated finish. Three, it can be operated at any speed necessary to provide for desired production.

At Delta, for example, the PT lamp is now actually painted as two separate parts, the upper half of the shell with the lens retainer ring, and the lower half-shell. When parts were finished by a previous method, two additional operations were necessary since the retainer ring, which is the part that holds the glass lens on the light, had to be painted separately and handled twice. With the unique ability of the electrostatic process to paint around a curve, however, the retainer ring while assembled to the upper shell can be given a smooth, even coat as it passes through the electrostatic field.

The electrostatic spray-coat method of painting is not exactly new. It was invented by a young factory executive, Harold Ransburg of the Harper J. Ransburg Company, Indianapolis, and was applied with spectacular success in war plants. With the end of the war, finishing department executives were able to turn to the electrostatic process as a means of increasing production and cutting costs in the finishing department to offset rising material and labor costs.

The process employs the electricity principle familiar to every high school student of physics; namely, that like charges repel while opposites attract. The same principle explains why a rubber comb is sometimes found to pick

THESE INDUSTRIAL RUBBER GLOVES ARE

ROUGH and TOUGH!

SURETY SURESEAL . . . . SUPER RESISTANT SYNTHETIC

WITH THE NEW GRIPTITE FINISH

MORE SAFETY • Griptite means no *slips*. And this exclusive rough-surface finish won't peel or wear off.

MORE ECONOMY • Laboratory tests prove Sureseal synthetic outwears natural rubber 10 to 1! Four times harder to snag!

MORE RESISTANCE • Maximum resistance to acids, chemicals, oils, solvents, etc. Write for descriptive folder.

THE SURETY CARROLLTON, OHIO RUBBER CO.

SPEED UP... **CUT COSTS WITH THIS "CHEMICAL OF TOMORROW"**

Introduced by General Chemical Research less than a year ago, Zinc Fluoborate Solution has already proved an outstanding electroplating chemical. Its superiority to other commercial zinc baths is indicated both in high speed continuous operations and by unusual coverage in tank plating. It gives excellent adherence and uniform coverage as well as a semi-lustrous finish; also possesses high conductivity and permits the use of high current densities. For detailed information on the use of Zinc Fluoborate—

**WRITE TODAY for this important manual!**

General Chemical Technical Information Manual ZF-1 contains extensive data on high speed and tank and barrel plating with Zinc Fluoborate, including operating details, bath make-up, analytical methods, etc.

**For free copy,** write General Chemical Fluorine Division, 40 Rector Street, New York 6, N. Y.

***HIGH-SPEED PLATING***

Zinc may be readily deposited at a higher rate from the Zinc Fluoborate bath than from other acid baths, for this metal fluoborate electrolyte possesses high conductivity and permits the use of high current densities.

***TANK AND BARREL PLATING***

Zinc may be readily deposited on cast or malleable iron from the Zinc Fluoborate bath with excellent covering power, good adhesion, and with a semi-lustrous appearance.

**GENERAL CHEMICAL COMPANY**

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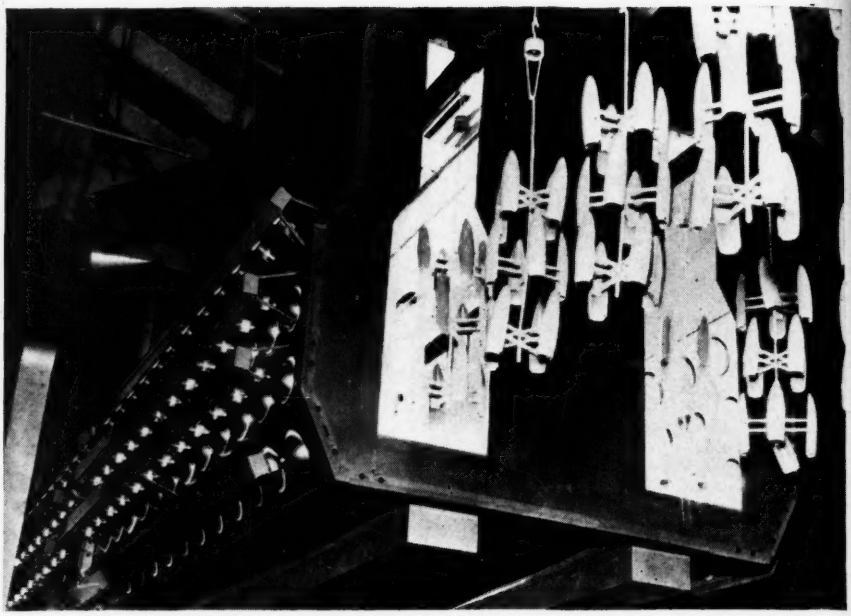


Fig. 2—After enamel is applied, torpedo lamp shells are transported upward on the conveyor and through an infra-red oven.

up bits of paper and fluff.

Delta has found that its painting costs are now far below what they formerly were. On the torpedo lamps, $1.20 worth of enamel now provides a smoother finish than $4.80 did when a high percentage of the enamel missed the lamp shells entirely and spattered against the paint spray booth wall, or was drawn up the ventilating exhaust stack as wasteful overspray. Delta actually is saving 40 per cent in its enamel finish costs, since in addition to paint savings, they are saving the floor space, equipment, and labor for men who would be needed to equal the production rate obtained with the electrostatic finishing process.

The present enameling department occupies an area of about 60 feet by 50 feet and consists essentially of a spray booth, infra-red oven, and conveyor. Even in this small area, the floor space under the infra-red oven is available for other uses, such as workholder storage and passageways. The entire finishing operation, including loading, electrostatically spraying, baking, cooling, and unloading, is performed within a conveyor length of 135 feet.

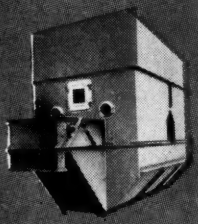
Loading and unloading of the workholders is performed at a single station and is facilitated by the use of small permanent magnets which hold the parts to the workholders. This innovation in itself obviates the need of many special workholders and also saves labor. With the PT bicycle lamps, 12 parts are carried on each workholder, and these are spaced on 18-inch centers on the conveyor which moves at a speed of 7 feet per minute.

The paint is sprayed onto the parts by two Binks spray guns which are mounted on standards just outside the

- DESIGNED
- BUILT
- INSTALLED

*to Synchronize with Your Production Line*

If you are contemplating a new installation, or a rearrangement of your present equipment that involves any of the products listed above, Schmieg engineers can be of valuable assistance. They will gladly make recommendations to meet your production requirements without cost or obligation to you.



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PRODUCTION FINISHING SYSTEMS

SPRAY BOOTHS

FRESH AIR SUPPLY SYSTEMS

OVENS—DRYING and PROCESSING

Schmieg INDUSTRIES INC.

*Engineers & Manufacturers*

spray booth and about 18 inches in front of the electrostatic field, as shown in Fig. 1. In the spray booth, the electrostatic unit consists of a framework of fine wires arranged on each side of the conveyor. These electrodes are placed under a high potential so that atomized paint introduced into the electrostatic field thus established becomes negatively charged and immediately is attracted to the parts, which remain of opposite polarity because they are grounded through the conveyor and workholders. The workholders, incidentally, are rotated as they pass through the spray zone. The coating zone itself, defined by the electrodes, is roughly four by three feet.

Once the pieces pass through the booth, they are immediately transported upward by the conveyor and through an 18-foot Hall infra-red oven as shown in Fig. 2, where they are baked for 5½ minutes at 330 degrees. The parts, cooling enroute, are then returned to the unloading station, where they are snapped off the magnet workholders and are ready for the final assembly operation.

This modern electrostatic method of finishing requires only one operator and from two to five persons who load and unload the conveyor which transports the parts through the entire finishing operation.

From the standpoint of improved quality and faster production at lower cost, the electrostatic finishing process reduces maintenance and improves the working conditions not only for the employees in the painting department but in other nearby departments as well. Booths require only infrequent cleaning and workholders require stripping only once every three months.

ONE SOLVENT
For all Metals or Combination of Metals
BRASS
ALUMINUM
PRECIOUS METAL
COPPER
STEEL
NEW SCIENTIFICALLY IMPROVED
BLACOSOLV
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NIAGARA METAL PARTS WASHERS
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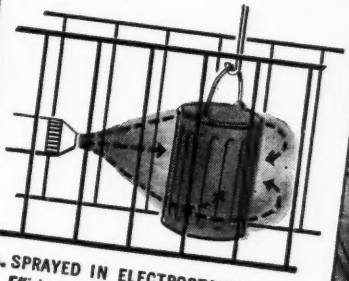
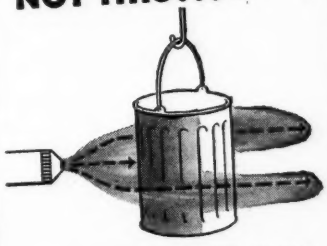
# RANSBURG
## *Electrostatic*
PAINTING PROCESSES

THIS...



A. SPRAYED IN ELECTROSTATIC FIELD
Efficient application with negligible waste.

NOT THIS...

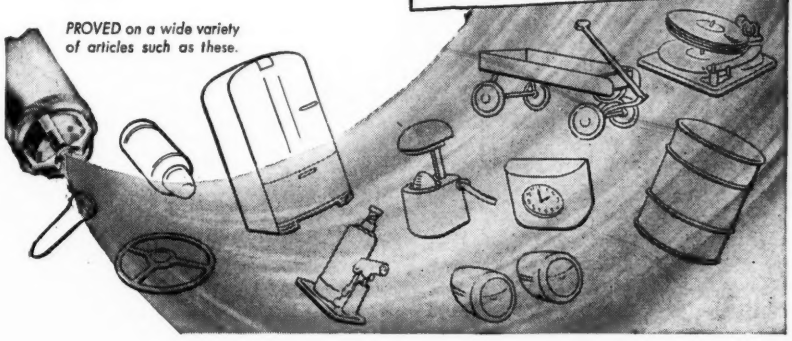


B. SPRAYED BY ORDINARY METHOD
Overspray wastes up to 65% of paint.

## *Proved* PRODUCTION ECONOMIES

- **Save coating material** — normally 40% to 50% . . . sometimes more! Used with commercially available finishes.
- **Saves labor** — fully automatic . . . requires only one attendant. Booth clean-up reduced as much as 90%.
- **Assures quality finish**—a consistently uniform finish . . . with fewer rejects . . . at *any* production speed.
- **Increases production** — constant production . . . more efficient operation, supervision and inspection.
- **Saves space**—a compact Ransburg unit often replaces several spray booths.

*PROVED on a wide variety of articles such as these.*



# Finishing Clinic

## Importance of Chromium Plating Under Conditions of Optimum Throwing Power

By DR. ALLEN G. GRAY

THERE is little doubt that chromium plating will continue to find extensive use as a final finishing operation in which the chromium is applied as a thin coating to serve as a non-tarnishing, durable, surface finish for decorative purposes on many types of metal articles, usually over undercoats of copper and nickel. In the electrodeposition of chromium, the electroplater in charge of this activity of the finishing department is primarily interested in turning out well-plated articles with the most efficient utilization of the equipment available. Thus, the primary concern must be the appearance of the plated part, even in view of the fact that other points of consideration must be kept in mind, such as voltage required, current efficiency, and heating cost. Probably the most important factor contributing to the successful operation of chromium plating baths in regular production is the so-called throwing power of the solution; herein lies the ability of the plating bath to provide a uniformly bright deposit over a wide variety of irregular objects.

For the most efficient functioning of this final phase of the copper-nickel-chromium finishing operation it is essential that decorative chromium plating baths be operated under the conditions that afford the maximum throwing power obtainable. The electrolyte for chromium plating is considered to be relatively simple, consisting originally of only two constituents; namely, chromic acid and a small amount of

**A Monthly Digest on Current Technical Progress Indicating Significant Trends and Developments in the Finishing Industry**

*THIS MONTH . . . Importance of Chromium Plating Under Conditions of Optimum Throwing Power . . . Chemical Treatment Improves Corrosion Resistance of Zinc Electroplates . . . Recent Developments in Silicone Resin Finishes . . . Value of Applying Phosphate Treatments in Final Assembly Should Be Recognized . . . Silver Can Be Electropolished . . . Highlighted Finish May Add to Attractiveness of Aluminum Articles.*

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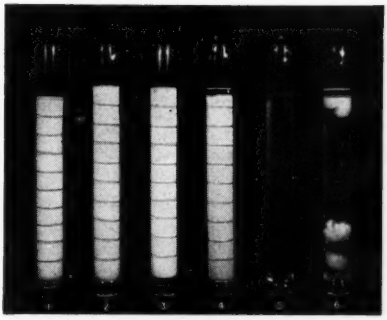

*Unretouched photograph showing the comparative stability of Emlon (1, 2 and 3) and a leading competitive product (4, 5 and 6).*

**Above you see the following 5% emulsions, after standing for 24 hours:**
**(1)** Emlon in tap water; **(2)** Emlon with 2.5% of sulfuric acid added; **(3)** Emlon with 2.5% of caustic soda added; **(4)** Competitive product in tap water; **(5)** Competitive product with 2.5% of sulfuric acid added; **(6)** Competitive product with 2.5% of caustic soda added. Note separation, or complete breakdown, of 4, 5 and 6.

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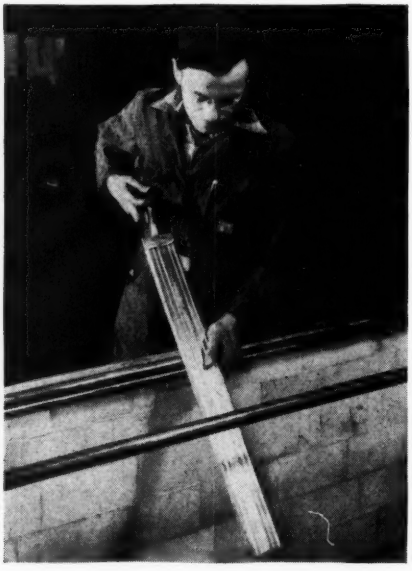
a catalyst acid radical, usually a suitable sulfate such as sulfuric acid ("Modern Electroplating"). For successful continuous operation of chromium plating baths at conditions of maximum throwing power, it is essential that the ratio (by weight) of chromic acid to total catalyst acid radical (sulfate) be accurately controlled and maintained within definite limits.

While the relatively poor throwing power of chromium plating baths, as compared with other commonly used plating baths, may be considered a disadvantage, good results are obtained, even in the plating of articles of irregular shape, if this optimum ratio of chromic acid to sulfate acid catalyst is carefully maintained. Special auxiliary anodes are sometimes used in order to cover deep hollows or recessed portions. Special anodes of a "sawtooth" design, such as shown in Fig. 1, are sometimes cast in order to provide

Fig. 1—Sawtooth design anode, typical of type used in some chromium plating operations (*Photo courtesy Heil Process Equipment Corp.*)



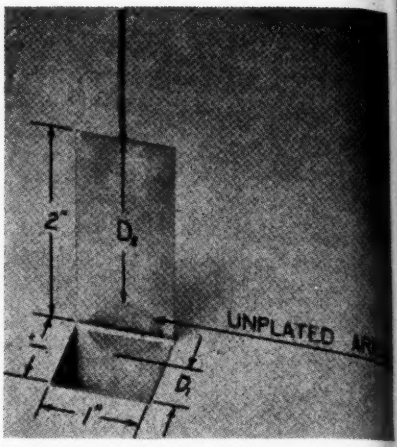



Fig. 2—Bent cathode throwing power test panel (*Photo courtesy "The Monthly Review"*)

additional surface exposed per square inch of flat anode surface. In using auxiliary anodes for chromium plating, they should be designed in accordance with the well known and long established principle of ample size for current - carrying requirements and proper spacing for uniform distribution of current.

Some of the factors affecting the operating characteristics of chromium plating baths have recently been studied by W. L. Guthrie and F. L. Clifton of the General Motors Corporation Research Laboratories, in which it was shown that changes in conditions of plating or unbalancing of the relative proportion of electrolyte constituents first manifest themselves in a change of throwing power (see also "The Monthly Review," Feb. 1947). During the electrolysis of a chromic acid solution, the current is used for two processes at the cathode: (1) reduction of chromium ions and (2) reduction of hydrogen ions and evolution of hydrogen. Of the hexavalent chromium ions that are reduced, only a portion are reduced completely to metallic chromium, the remainder being only partially reduced, namely to trivalent ions.

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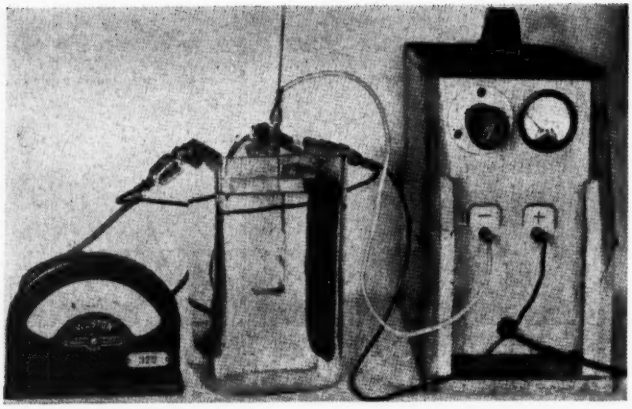

Fig. 3 — Setup used for making throwing power determination (*Photo courtesy "The Monthly Review"*)

Thus in actual practice, a large part (80 per cent or more) of the current is ineffective toward producing a metallic coating. However, even though the current efficiency is low, the process is still economically feasible for the deposition of thin chromium coatings such as are used in bright decorative work.

If for any reason, the concentration of chromic acid cannot be restored after having been depleted by dragout or electrolysis, or the concentration of sulfate-ion becomes too high, it becomes necessary to determine what changes must be made in temperature and current density in order that a bright chromium deposit be produced. Since the sulfate is depleted only by dragout, means must be found whereby some of the sulfate can be removed from the electrolyte. This must be done in order to maintain the sulfate catalyst-chromic acid ratio at a value which provides good throwing power. According to the recommendations of Guthrie and Clifton, barium hydrate, $Ba(OH)_2$, was found to be satisfactory for the removal of excess sulfate from chromium plating baths and thus maintain the throwing power at the optimum.

Oftentimes it may be desirable for the electroplater in the finishing department to check the throwing power of chromium plating baths being used in production by actual plating tests. The standard bent cathode test, such as was used by Guthrie and Clifton in their recent experimental studies, provides a valuable tool for this purpose. The bent cathode used for throwing power studies was made by bending a 1 x 3-inch copper strip, 0.022-inch thick in a die to the measurements shown in Fig. 2. The inside radius of the bend is 1/32 inch. Guthrie and Clifton used a two liter volume of solution in a 5 x 5-inch square glass jar with anodes on two opposite sides, as shown in Fig. 3. When such a panel is plated with chromium, a tendency exists for the metal to deposit only along the outer edges and at the ends of the legs where the current density is highest. This leaves an oval-shaped unplated area at the intersection of the legs (Fig. 2). Thus, the size of the unplated area shows the ability of the plating bath to deposit metal over an irregular object, and is always a measure of the throwing power of the solution. For most successful operation, it is desirable that the temperature, electrolyte concentration, and the ratio of sulfate ion catalyst to chromic acid be so adjusted to provide the minimum unplated area.

The Hull Cell may be used as a practical means for adjustment of sulfate ion catalyst-chromic acid ratio in chromium plating baths to the opti-

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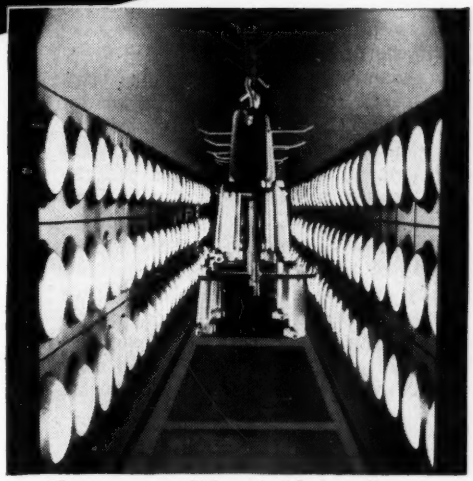

*Photos courtesy "Electrified Industry"*

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mum value by determining the effect of this ratio upon the cathode in plating tests with reference to covering power and breadth of bright current density range (see also Proc. Am. Electroplaters' Soc., 1943). The function of the Hull Cell, a diagram of which is shown in Fig. 4, is to provide by geometric configuration a cathode deposit on a flat surface that records reproducibly the character of the electroplate produced at all current densities within the operating range. The usable optimum current densities can thus be determined from the midpoint of the acceptable plating range.

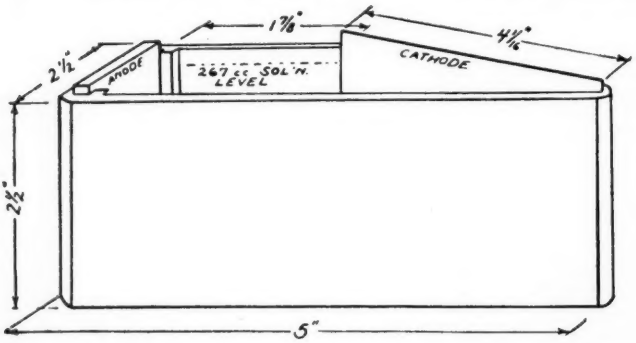
Plating tests are usually made with the chromium plating bath maintained at the temperature used in production, using 5 amperes total cell current for 5 to 10 minutes. Chromium plating solutions containing no sulfate will show an iridescent yellow oxide deposit; solutions low in sulfate will exhibit a narrow plating range with some brown oxide coating. As the sulfate content increases, the amount of brown oxide decreases and finally disappears. Chromium plating baths high in sulfate will show a narrow plating range, with a deposit produced only at high current densities.

It is evident, therefore, that the Hull Plating Test Cell, which is now available constructed from materials resistant to chromic acid, may be used as a practical means for adjusting the sulfate ion-chromic acid ratio of baths under conditions of production to provide the optimum covering and throwing power. It is recommended that plating tests be correlated with analysis of the bath for chromic acid. Once this factor is adjusted, plating tests may then be used to determine the proper addition of sulfate by adding in small increments to the plating sample to provide the widest plating range on the cathode plate. The production man may find both the bent cathode plating test and the Hull Cell test useful tools for control and adjustment to provide better decorative chromium plating in this division of the finishing department.

* * *

## Chemical Treatment Improves Corrosion Resistance of Zinc Electroplates

WITH the increasing extensive use of zinc plating on various types of steel articles, the need may become apparent in many finishing operations for a practical means of retarding the white corrosion products which form on zinc under certain conditions of exposure. Protective coatings produced by converting the surface of a metal into a chemical compound of exceedingly low solubility in the environment to which it is to be exposed are becoming of importance and are be-




NOTE: ALL DIMENSIONS GIVEN ARE INSIDE MEASUREMENTS

Fig. 4—Drawing showing recommended size and shape of Hull Cell plating test apparatus

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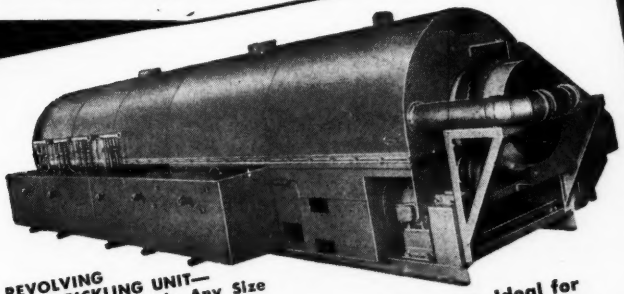

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ing increasingly used. The finishing engineer should keep in mind the fact that a number of solutions are available commercially for the production of various types of conversion coatings on zinc plate surfaces which will lend extra corrosion resistance and in some instances make the coating more suitable for the application for which it is intended. Oftentimes, it is desirable to further improve the corrosion resistance of the chemically treated zinc surface by the application of an appropriate clear synthetic lacquer.

One application where zinc plated steel, chemically treated and lacquered, has found extensive use is as a finish for refrigerator shelves. It has been reported that this finish is harder and provides greater protection against rusting than the previously used tin finish (see also "Materials and Methods," March, 1947). The sequence in the finishing operation for steel refrigerator shelves involves, first, zinc plating to a thickness of 0.0003 to 0.0005 inch; the zinc plated steel parts are then treated electrolytically in the "Anozinc" proprietary chromate type solution to effect the formation of the zinc conversion coating. Finally, the shelves are coated with a clear baking synthetic lacquer to provide increased abrasion resistance. Conversion coatings are finding applications in many other types of finishes to provide added corrosion protection to certain plated coatings, and it appears as though many more applications for conversion coatings will make their appearance in the not too distant future.

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* * *

## Recent Developments in Silicone Resin Finishes

ACCORDING to a presentation by Dr. James R. Patterson, General Electric Company, Schenectady, N. Y., before the spring meeting of the American Chemical Society in Atlantic City, recently developed paints, varnishes, and enamels produced from silicones have shown unusual resistance to heat, weather, and chemical corrosion. It was stated, further, that under ordinary conditions the finishes will not crack, fade, stain, or lose their gloss. Future uses of the silicone finishes, predicted by Dr. Patterson, will be on various metal products and appliances, automobiles, machinery, signs, and so on. Because of the relative high cost and limited production at the present time, these silicone finishes are being applied to furnaces, boilers, hot exhaust stacks, and chemical plant equipment where their resistant properties are of prime importance.

Ranging from hard and brittle glass-like materials to heavy oils, the newly developed silicone materials are colorless or nearly so, and are report-

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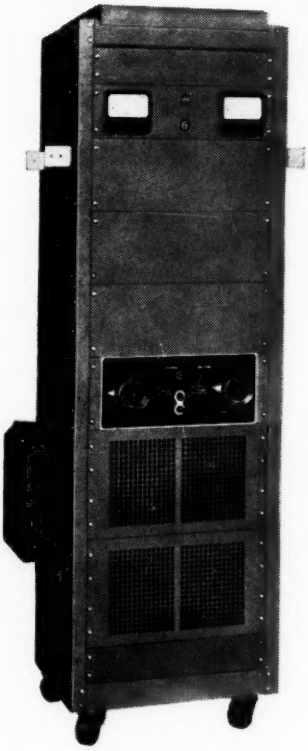

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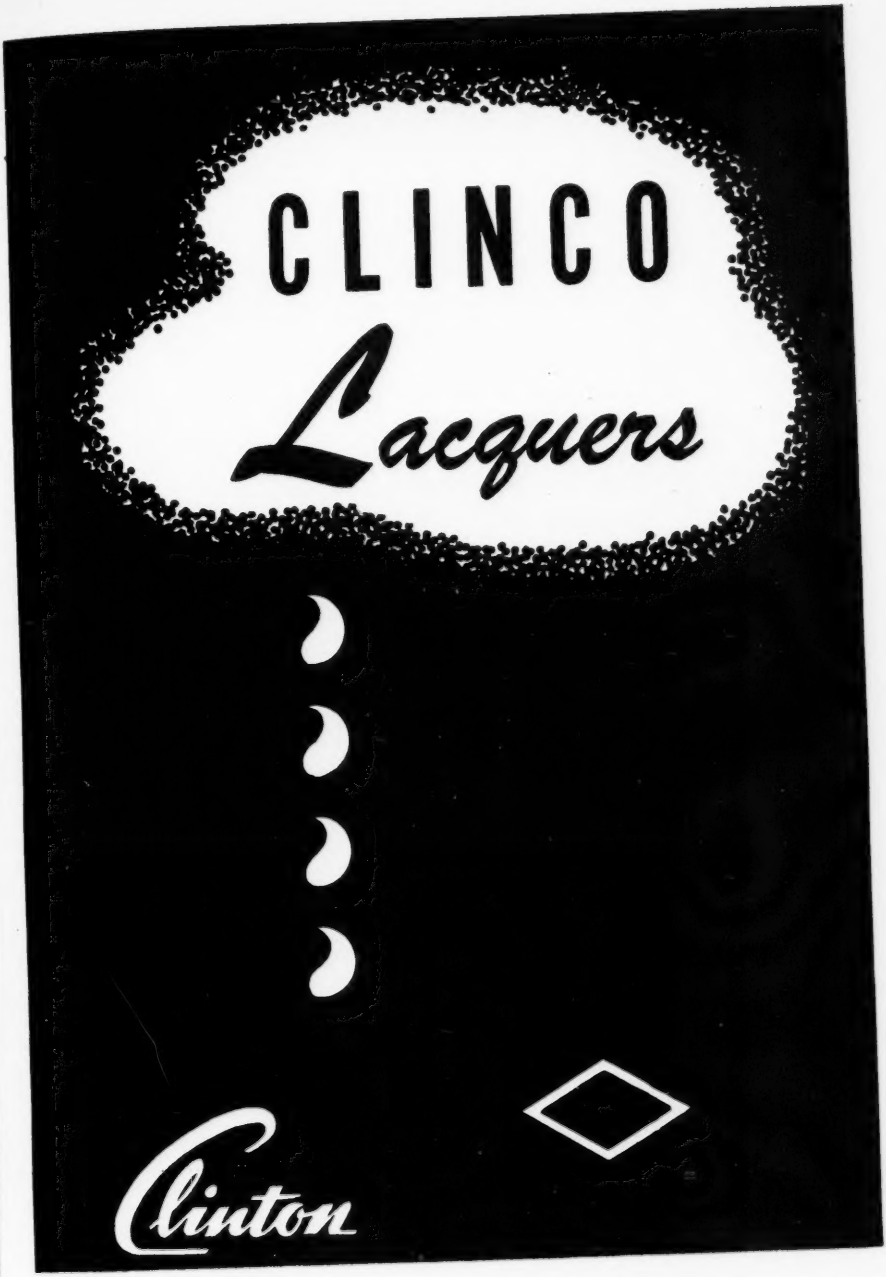
Fig. 5 — Test panels showing resistance of silicone finishes to dilute acid (*Photo courtesy General Electric Co.*)

ed to be easily dissolved in organic solvents and to blend readily with many of the common pigments. Also, according to Dr. Patterson. the future outstanding property of these materials as finishes might be their excellent resistance to heat, weather, and various chemicals. They will withstand temperatures of 1,000 deg. F. for a few hours and 500 deg. F. for several hundred hours, he stated. Based on present knowledge, the most heat resistant silicone finishes are those pigmented with ordinary amounts of aluminum powder.

Earlier in the year, Dr. Patterson discussed the use of silicone resins in protective and decorative finishes in an address to the C.D.I.C. Paint and Varnish Production Club, wherein it was pointed out that the basic structure of silicone resins is believed to be silicon-oxygen-silicon and similiar to the molecular structure of quartz. Organic radicals such as methyl and phenyl are attached to the silicon in this structure to provide solubility, flexibility, and toughness. The relative stability of the silicon to oxygen linkage plus the presence of little or no unsaturation is thought to be considerably responsible for the unusual resistance characteristic of silicone resins.

According to information presented by Patterson, silicone resins can be made to be compatable as cold blends with other film forming materials such as urea-formaldehyde, ethyl cellulose, and acrylate resins. However, it was pointed out that these blends are usually inferior to products which are made by chemical co-condensation. Alkyd-silicone co-condensations are of particular interest for their promise of unusual hardness, adhesion, toughness, and heat as well as chemical resistance.

Color retention at high temperatures is an outstanding and readily demonstrated silicone characteristic. One test cited by Patterson showed that a silicone white enamel would withstand temperatures as high as 480 to 500 deg. F. with very little discoloration in 24 hours, while in 2 hours an alkyd-melamine discolored badly and an alkyd-silicone discolored appreciа-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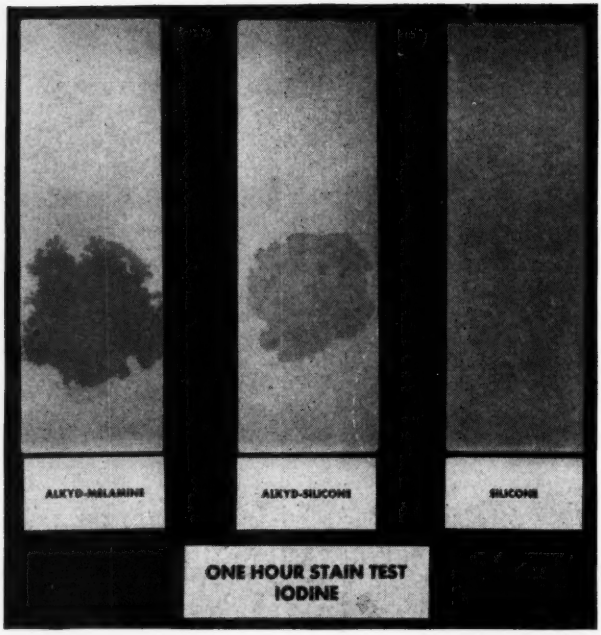


Fig. 6—Test panels showing resistance of silicone finishes to iodine staining (*Photo courtesy* General Electric Co.)

bly, but much less than the alkyd-melamine. The resistance of silicone and alkyd-silicone resins to many dilute acids was reported to be excellent. Three per cent solutions of hydrochloric, sulfuric, nitric, and lactic acids at 100 deg. F. were found to have little or no effect. Figure 5 shows the resistance of these finishes to warm dilute hydrochloric acid in tests conducted by the General Electric Company. Also, the tests showed that silicone resins have excellent resistance to diluted alkali solutions; immersion in a 3 per cent caustic soda solution at 100 deg. F. for 100 hours was found to have little or no effect on the coating. Under the same conditions it was reported that an alkyd-silicone was badly attacked in about 50 hours and an alkyd-melamine failed completely in 24 hours.

Inferior resistance to hydrocarbon solvents was pointed out as one weakness of the silicone resin group. Silicone finishes show little or no staining by iodine, mercurochrome, mustard, and grape juice. Iodine is generally regarded as a potent stainer, but Fig. 6, prepared from the General Electric tests, shows how little it affects a silicone. However, even in view of all these tests, it was pointed out by Patterson that possibly one of the most useful qualities of the silicone finishes will probably be their superior weather resistance (see also Official Digest, Federation of Paint and Varnish Production Clubs, March, 1947).

It was reported by Patterson that recent developments have reduced the baking schedules of silicone finishes to more practical levels. With the newer resins, one-half to one hour at 400 deg. F. or one to two hours at 300 deg. F. are suitable for most uses. Straight silicones can be made hard enough to air dry by evaporation but they may be too thermoplastic and are much inferior in chemical and weather resistance to those which are heat cured. It was predicted that the future work on silicone will probably provide alkyd-silicones which will be more suitable for air drying.

It was pointed out that by nature, probably because of low molecular polarity, as it was termed by Patterson,

E

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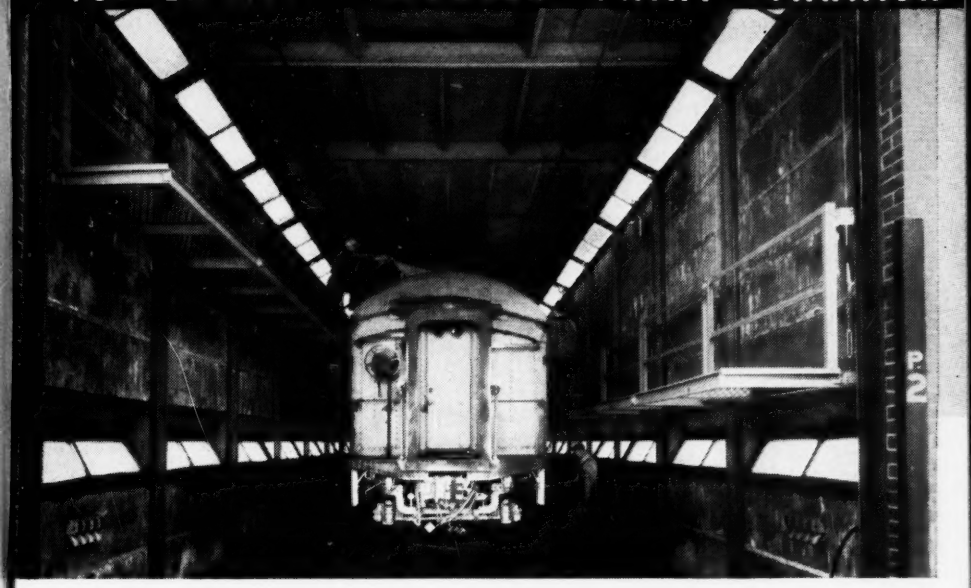

Here is a typical Mahon Finishing System designed to meet railroad requirements in shops where repainting of rolling stock constitutes a major operation. This system consists of two combination Spray Booth-Dryers (one is illustrated above), and a Filtered Air Supply Unit. The two Spray Booth-Dryers are installed on parallel, adjacent tracks inside the shops, and may be operated simultaneously or individually as desired. This installation is another excellent example of the thoroughness of Mahon planning and engineering to meet specific requirements under any conditions. Twenty-seven years of pioneering and constant research in this highly specialized field have endowed Mahon engineers with a wealth of technical knowledge and practical know-how not available to you elsewhere. See Mahon Insert in Sweet's Mechanical Industries File.

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silicone finishes are deficient in adhesion, but this can be overcome by using a primer. Very good results were reported using an alkyd-melamine primer; also, tests have shown that a conventional coconut oil alkyd and melamine resin white enamel can be used as a primer with no sacrifice in heat and chemical resistance. Best results were reported on using the primer at low solids and applying only a thin mist coat, followed by application of a top coat, both coats being baked at the same time. Finishers and designers of metal products will want to keep up to date on new developments in silicone resin coatings.

* * *

## Value of Applying Phosphate Treatments in Final Assembly Should Be Recognized

FINISHING engineers evaluating the use of phosphating treatments on metal products prior to the application of paints or specialized organic finishes should realize fully that most value can be obtained from such treatments if they are applied to surfaces on which all the filing, grinding, or other operations required to present a satisfactory smoothness to the surface are carried out prior to the phosphating treatment. Thus, full value is received from the phosphate corrosion inhibiting coating since it is unnecessary to disturb the treated surface after the parts are taken away from the phosphating bath. The use of phosphate coatings on steel surfaces is a generally recommended procedure for surface preparation by most manufacturers of organic finishes for the utmost in service requirements, and they are particularly advisable if the organic finish is to resist any form of severe corrosive conditions.

For high volume production, the cleaning and phosphating of steel surfaces, representing assembled articles, are generally most satisfactorily and

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economically performed by means of spray systems. After the cleaning and surface preparation operations have been performed, it is important that the surface to be coated not be handled with bare hands or contaminated in any way. Assembled parts that have been prepared for painting should be handled by means of hooks or clean canvas gloves. These precautions should be followed irrespective of the metal surface composition or metal preparation used. One of the most common causes of failure of organic coatings is contamination of the prepared surface with perspiration marks due to improper handling.

The importance of obtaining the full benefits of phosphating treatments by treating complete assemblies just prior to coating is brought out by the recent installation at the Ford Motor Company of tunnels, each equipped with the latest type of spray phosphating equipment. The phosphate treatment is applied on a continuous basis to bodies on which all sheet metal work has been completed, and the operations are geared so that the bodies subsequently pass into the paint booth. Phosphate treatments generally produce a slightly etched surface on the sheet steel parts. Conversion coatings of the phosphate type are integral with the base metal surface and in addition to being a good rust inhibitor, provide a desirable surface for the primer coat application.

One of the frequent causes of organic finish failure on metal surfaces is water soluble chemical contamination which is generally invisible. Applied finishes may appear normal and in perfect condition but fail prematurely by blister formation. Thus, it is important to have proper rinsing facilities following phosphating. One simple procedure for determining if harmful water soluble impurities or contamination is on the metal surface is to immerse a sample of the finished ware in water maintained at 110 deg. F. for a period of 24 to 48 hours or, as an alternative treatment, expose samples of coated ware to a relative humidity of 100 per cent at 110 deg. F. under conditions that produce continuous sweating. Excessive blistering or noticeable loss of adhesion indicates unsatisfactory chemical cleanliness. The importance of this test is more fully realized if it is remembered that the detrimental effect of water soluble chemical contamination generally is invisible to the eye and does not exhibit itself by defects in the freshly painted surfaces.

Light deposits of water soluble chemical contamination on metal surfaces of completely assembled metal articles that are to be painted are generally considered to be much more damaging to the finish than light deposits of certain oily materials. However, it is not intended to detract from the necessity for the suitable removal of


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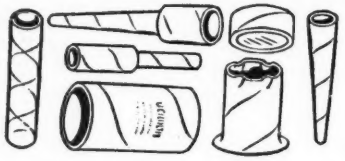
*Protectors designed to fit the part*
Take no chances with makeshifts. Precision Protectors save their small cost over and over. Acid-free paper and chemically neutral adhesives spirally wound for strength. Will not slip off. Send for folder and prices.
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*Mfr. of dielectric Paper Tubes and Bobbins*
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You can now copper, nickel and chromium plate, zinc diecastings and other soft metal parts without intermediate buffing operations. Mirror-bright copper deposits are obtained by adding MAC DERMID INCORPORATED Bright Copper Makeup to a single cyanide copper plating solution.

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A MAC DERMID INCORPORATED liquid addition agent especially formulated for improving your cyanide copper plating solution . . . assures brighter, more uniform copper deposits at higher current densities for racked and barrel plated articles.

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This is a MAC DERMID INCORPORATED reverse current cleaning process for zinc base diecastings. After removal of all heavy contamination, Dyclene will thoroughly activate the surface . . . leave it bright and stain-free.

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oils and greases but, instead, to place emphasis on a phase of metal finishing surface preparation often overlooked or not understood. The fact that a metal surface on a final assembled article appears clean does not necessarily mean that it is chemically clean. It cannot be overemphasized that the foundation on which a successful and durable finish is built is a properly prepared surface.

* * *

## Silver Can Be Electropolished

THE production man in the finishing department concerned with improvements in electroplated silver may be interested in a new electropolishing process for silver developed in the research laboratories of Arthur D. Little, Inc., Cambridge, Mass., under the sponsorship of Oneida, Ltd., Oneida, N. Y. The process, which is the subject of the recent U. S. Patent No. 2,416,294, involves passing a current reverse to that employed for normal plating and is performed in a final bath immediately after plating, the silverware remaining on the plating racks. It is reported that the new process can produce a complete polish up to mirror brightness. Use of the process may result in reduced buffing costs and improved quality.

The new polishing process utilizes an alkaline cyanide solution. According to a report by Daniel Gray of Oneida, Ltd., and S. E. Eaton of Arthur D. Little, Inc. in "The Iron Age" (Apr. 10, 1947), a typical solution consists of 4 to 5 oz./gal. (Troy) silver added as $KAg(CN)_2$, 4 to 5 oz./gal. (avdp.) potassium cyanide, and 6 to 8 oz./gal. potassium carbonate. In the operation of the bath, a potential of about 2.7 to 3.5 volts, d.c., is used, depending somewhat on other operating conditions. Any degree of polish can be attained, depending on the period of polishing; if a light color buff is to be applied following the polishing operation, as is reportedly done at Oneida, it is only necessary to carry out the polishing operation for about 20 seconds at a current density of 12 to 18 amp./sq. ft. Control of the bath is reported to be very simple, requiring only periodic analysis.

* * *

## Highlighted Finish May Add to Attractiveness of Aluminum Articles

VERY attractive effects may be obtained on aluminum articles by the process known as highlighting, which affords the raised portion of the surface one type of finish, and the recesses another, as shown in Fig. 7. It is reported that such decorative treatment has been widely used on refrigerator evaporator doors. The background is sandblasted and highlighted areas are buffed by the following sequence of operations recommended by the Aluminum Company of America:

Step 1—Raised areas are protected

A BETTER JOB-MORE PROFIT
with this speedy, efficient
Plating equipment
MGC electroplating generators and buffers are designed and built for maximum efficiency and dependable, trouble free service . . . making them more profitable to you for greater periods of time. Generators for electrolytic processes such as electroplating, electrocoloring, electrocleaning and electrotyping are available in capacities from 100 through 2000 amp. at 6 and 12 volts. Investigate MGC's complete line of finishing products. Write for full data.
MOTOR GENERATOR CORPORATION, BOX PF-87, TROY, OHIO

# This man wants samples of your unfinished product

He may well ask you for samples, as well as complete data on your finishing department—in order to help you meet production schedules!

He'll bring your problem to a team of Zapon specialists for development of the correct formula out of their experience in laboratory and production line.

Then the real test comes on your production line! You see for yourself that the recommended finish is more economical, more efficient and more satisfactory for *your* product under *your* conditions.

The finishing material itself is a small part of your total manufacturing cost—yet it can play a big part in control of output, sales quality and total manufacturing cost!

So you see this Zapon man's job is not so much to sell you as to *serve* you! He figures your cost per finished product, not per gallon of the finishing material!

Duranites, Zaponites and other well known finishes are now available for shipment in days—not weeks.

**For service on finishes, write or wire Zapon Division, Atlas Powder Company, Stamford, Connecticut, or North Chicago, Illinois.**

ZAPON
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**zapon production finishes**

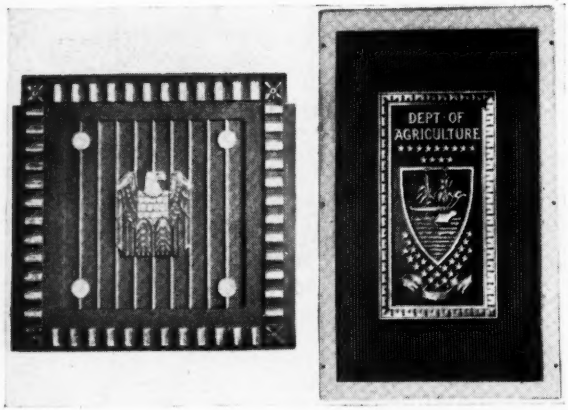


Fig. 7—Sand-cast aluminum spandrels finished by sandblasting, highlighting, and anodic oxide coating (*Photo courtesy Aluminum Company of America*)

by some covering, such as adhesive tape, a rubber mask, or heavy paint, while the background is sandblasted.

Step 2—The article is given a caustic treatment to prepare the sandblasted background for later finishing by an anodization process.

Step 3—The background is protected by taping or painting while the highlights are buffed.

Step 4—An anodization process is carried out as a final operation to protect permanently the entire surface.

The technique for highlighting castings has been worked out in considerable detail for architectural applications. Generally, the work is done by means of rotating abrasive wheels for irregular castings; for flat articles, a belt sander is used.

Wheels used are standard 6 to 12-inch sewed muslin discs, glued together to provide the required thickness and faced with No. 60 to No. 120 emery. The normal precautions in setting up such a wheel should be observed and the glue should be allowed to dry thoroughly before use, according to the Aluminum Company of America recommended procedure. Each new wheel should be broken down with a file to reduce the heavy cutting action of the fresh emery. Polishing wheels of this type are employed in connection with horizontal air grinders operated at a speed of from 3,400 to 4,400 r.p.m. If larger wheels are used, the speed may be reduced to maintain the same peripheral speed. Wheels with No. 120 emery are used with tallow. Wheels with No. 180 emery are commonly employed with a greaseless polishing medium. If more lustrous finishes are desired, the surfaces may be buffed with a muslin felt wheel or a compound such as tripoli. A buffed surface may be given a still higher luster by coloring.

Where plain flat surfaces must be highlighted absolutely smooth and free from ripples, a belt sander is used. Cloth belts of Nos. 80, 120, 140 and 180 emery are employed in the order given, depending on the texture desired. No. "0" tallow and a small amount of machine oil are required as a cutting lubricant, or a thin paste of paraffin and turpentine also makes a satisfactory compound. A belt-sanded surface may also be buffed with muslin wheels and tripoli if a lustrous finish is desired.

---

**Hydrion pH Test Papers** are illustrated, described, and listed as to prices in a six-page folder now being distributed by R. P. Cargille, 118 Liberty St., New York 6, N. Y. Copy free upon request.

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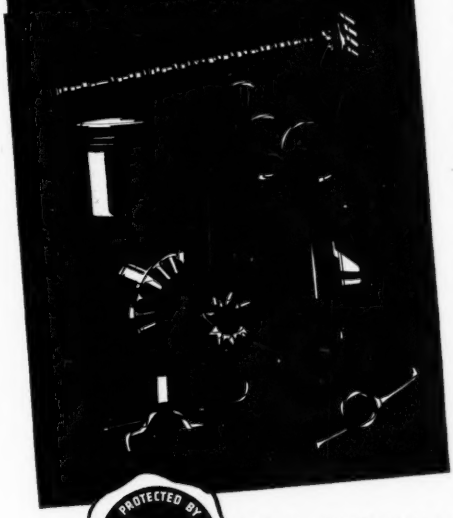
**Unichrome Price List.** United Chromium, Inc., 2751 E. Jefferson Ave., Detroit 7, Mich., now has available a four-page price list on Ucilon Maintenance Coatings, Unichrome Air-Drying Lacquers, and Unichrome Baking Synthetic Lacquers. Copy free upon request.

# PARCO LUBRITE HOLDS OIL

## Faster Break-in, No Scuffing or Scoring, Less Subsequent Wear

Parco Lubrite Coating, Magnified 100 times



Protection for wearing parts through the initial run-in period! Parco Lubrizing* is being used increasingly for this purpose. The coating is easily applied and is very effective, allowing faster, safer break-ins and minimizing the dangers of injury to expensive parts during this time.

Parco Lubrite's nonmetallic phosphate coating has a great affinity for oil, holds it through stresses and pressures, provides positive lubrication in operation. Metal-to-metal contact is avoided.

Many manufacturers today are using Parco Lubrizing on ring gears and pinions, crankshafts, clutch parts, cylinders, pistons, rings, valves, camshafts, pulleys, and universal joints.

To protect the wearing surfaces in the machine assemblies you build—Parco Lubrize! Write for full information today!

PROTECTED BY Parco Lubrite TO RETARD WEAR

**PARKER RUST PROOF CO., 2172 E. Milwaukee Ave., Detroit 11, Mich.**

*Parco Lubrite—Reg. U. S. Pat. Off.

# PRACTICAL APPLICATIONS *of Modern Products*

## Simple Rust-Proofing Process Solves Range Production Problem

THE "Kenmore" electric ranges illustrated in Fig. 1 are manufactured by the Newark Stove Co., Newark, Ohio. These ranges, rating among the most modern produced in the United States, are provided with a high quality porcelain-on-steel finish on the surface panels. The added factor of rust resistance of the internal and structural parts assures them a long life. However, the necessity of keeping the cost of the ranges down to a required level has provided the plant engineers a real problem in finding out how to apply quickly and effectively a chemical coating which would prevent the formation of rust at any processing stage and also establish a durable bond between paint and metal.

After exhaustive tests, Newark Stove has adopted the Banox rust-proofing process developed by Calgon, Inc., Pittsburgh, Pa. A simple room-temperature process requiring minimum equipment, the rust-proofing treatment has been in use in the plant since July, 1946, with the results ob-

Fig. 1—View of half-mile long finishing and assembly line at Newark Stove Company showing completed "Kenmore" electric ranges coming off the line ready for crating and shipment.

# Filter All Plating Solutions Faster, More Completely in

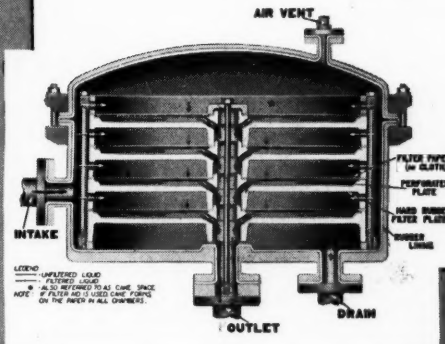
## SPARKLER *Horizontal Plate* FILTERS

Because the filter cake is held horizontally, it is absolutely stable to the end of each filtering cycle. And cycles are longer because the cake retains its porosity longer. That is why the "horizontal principle," as embodied in Sparkler filters, gives you more efficient, low cost, operation. Sparkler filters are pressure-tight and leak-proof, designed for intermittent or continuous operation.

**4 Plating Solution Types**

1. Rubber-lined for bright nickel
2. Stainless steel for acids
3. All Iron for alkaline solutions
4. All Steel (with Stainless Pump) for chromium

**SPARKLER MANUFACTURING CO.**
**Mundelein, Illinois**

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60 to 10,000 G.P.H.

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Our Engineering Service is available for any specialized problems.

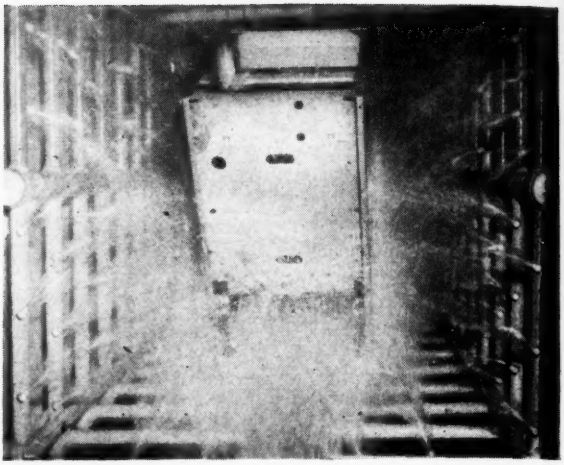

Fig. 2 — Range parts being thoroughly sprayed with Banox coating solution

tained being entirely satisfactory.

The nature of the Banox coating is that of an amorphous or non-crystalline substance, similiar in physical structure to the resins and plastics used in paint but entirely inorganic in composition. The coating is continuous and flexible, having no tendency to crack or flake off when metal is formed or to suffer deformation by impact. Its principal action is that it forms a film-like coating 15 millionths of an inch in thickness on the metal. The smoothness of the coating is said to make it ideal for high-gloss finishing purposes.

In the Newark Stove plant, the panels and steel bodies of the embryo ranges are placed on the finishing and assembly line conveyor a few yards away from the Banox installation. The panels and range skeletons are first conveyed into a hot spray bath in which Calgonite is used to clean the metal thoroughly at 130 degrees. The work is then conveyed into a cold rinse chamber. After emerging from this chamber, the work is effectively sprayed with Banox coating solution at room temperature, as shown in Fig. 2, following which it is passed into another cold rinse chamber. From here the range panels and bodies are conveyed through a section where they

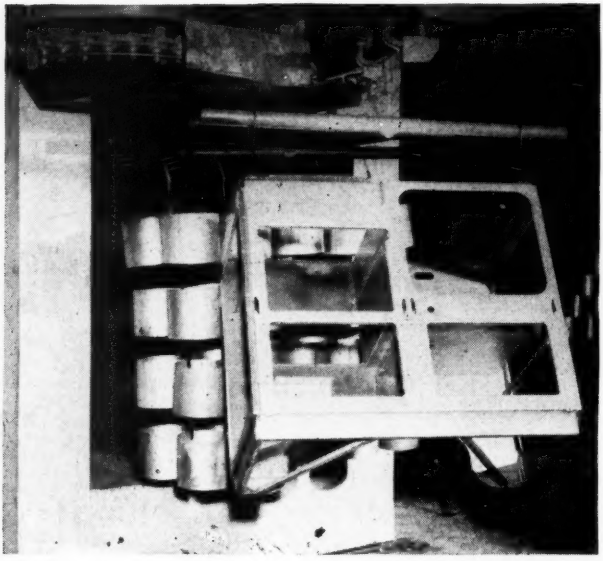

Fig. 3—Range body and panels emerging from drying oven after hot dichromate rinse

## But *Irons* and *Steels* Deserve JETAL BLACK

**. . . the best protective and blackening finish available**

**JETAL** is a tough, speedy "blackface" for your irons and steels. It is no thin skin of burnt cork illusion.

**JETAL** goes on fast, but it stays on. **JETAL** is better because it does more and costs less.

**JETAL** is a black oxide coating that is easily and inexpensively applied by immersion in less than 5 minutes.

**JETAL** is tough, long lasting and adaptable.

**JETAL** may be resistance or spot welded, and soldered.

**JETAL** will not chip, peel, crack, crumble or dust off, even on bending or cutting.

**JETAL** forms a fine base for lacquer, enamel or japan.

**JETAL** resists wear and penetration better than any black on the market.

**JETAL** is black **BLACK,** deep and solid.

**JETAL** does not change metals dimensionally after application.

**JETAL** costs less and can be applied by immersion in bulk, baskets or barrels.

### ← OTHER ALROSE FINISHES →

**BLACK**

**Oxidine B** — for blackening copper and brass.

**Oxidine Z** — for blackening zinc.

*Bring your finishing problem to ALROSE for the best solution. Let ALROSE JETALIZE your sample product, or demonstrate the JETAL PROCESS in your plant.*

**WHITE**

**Bon White** — an immersion tin finish for copper, brass or aluminum — exceptionally bright white — ideal soldering base.

**Wite Brass** plates a tertiary alloy of copper, zinc and tin, giving brilliant, non-tarnishing, long-wearing surface over all base or precious metals.

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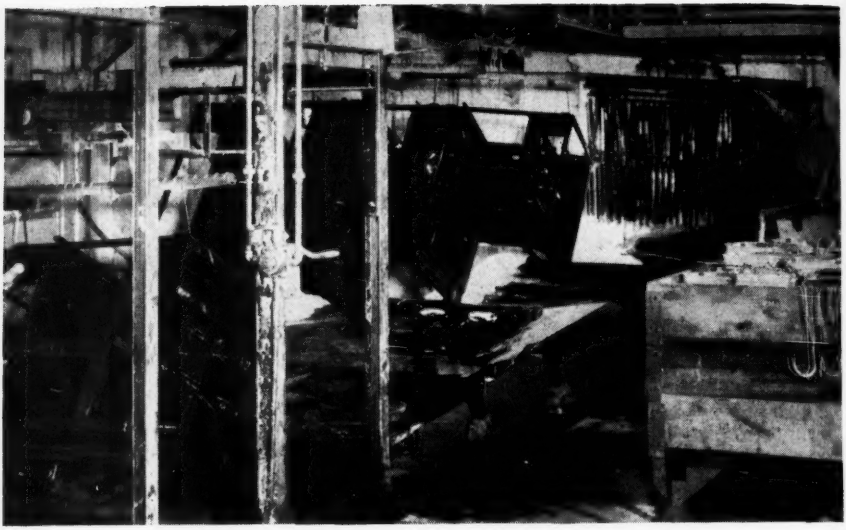


Fig. 4—Range bodies being conveyed to paint vats for dipping

are rinsed with hot dichromate at a temperature of 160 degrees, after which the materials are passed on to a drying oven. Upon emerging from the drying oven, as shown in Fig. 3, the work is conveyed to paint vats for dipping, as shown in Fig. 4, and then passed along to an oven for baking the finish.

The assembly line, including the finishing portion, is approximately a half mile long. To pass the work through the five stages of the Banox installation and drying oven, a period of 20 minutes is required.

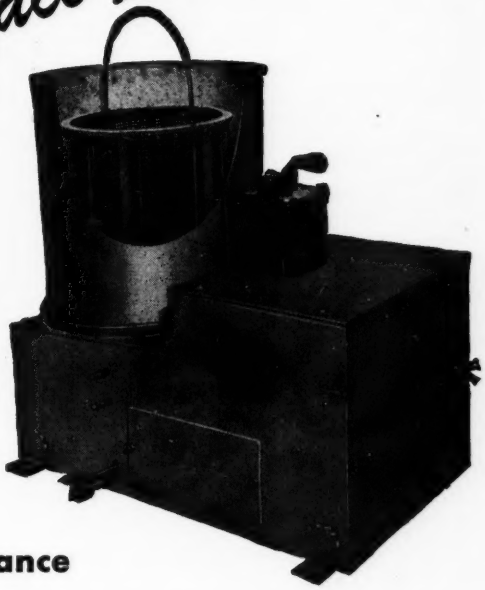
For many of the castings which are employed in the construction of Newark combination ranges and space heaters, the use of Calgonite for cleaning has also been found extremely useful. Since the castings are sandblasted, there is a tendency for some of the sand particles to cling and get into the japanning material. The use of Calgonite in the cleaning stage keeps all castings and sheet metal thoroughly clean and prevents the japan from becoming polluted. As a result, only one tank is required for applying each type of material.

## Automatic Finishing System Increases Production of Post Office Scales

THE finish on scales manufactured for United States Government post offices must be of high quality and long durability. To help achieve these ends with maximum efficiency, the Triner Scale and Manufacturing Company, Chicago, recently called upon Jensen Specialties, Inc., Detroit, to design, engineer, and build a complete finishing system.

As a result, a completely automatic finishing system was devised to handle large as well as small parts and shapes of almost every description.

*It all adds up to Better Surface Lustre*



# KREIDER

**Centrifugal Drying**

**=Uniform Drying**
**=Improved Surface**
**=Greater Rust Resistance**

Kreider Centrifugal Drying adds to the quality of small plated and lacquered parts. This speedy, economical method provides thorough, uniform drying. Finished parts have better film coating, improved lustre, greater rust resistance, *longer life.* And 35-second drying time plus one-man operation trims production cost.

The Kreider Dryer is compact, requiring minimum floor space. Equipped with ¾ HP motor, V-belt drive, foot-brake and reversing drum switch. Steam or gas auxiliary heating units are optional.

***Send for free bulletin giving complete specifications and showing Kreider Dryer installations.***

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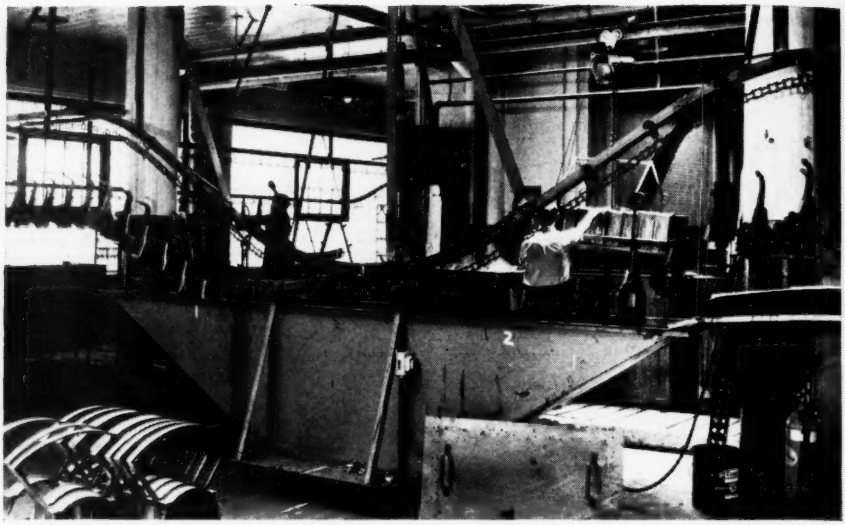
**729 N. Prince St. • Lancaster, Pa.**



Scale parts being automatically paint dipped by means of loop-around conveyor

Countless sizes and shapes are involved in the parts, since Triner manufactures scales not only for the Government, but also for the laundry, candy, warehouse, hardware, and many other fields.

Production on finishing at Triner has been stepped up over 40 per cent not only as a result of the automatic conveying of the parts from loading to unloading, but also by the fact that the Jensen "dual heat" infra-red oven used for paint baking accomplishes this operation in only a fraction of the time formerly required. The baking cycle ranges from 6 to 8 minutes, depending upon the size of the parts.

By means of a specially-built Jensen loop-around conveyor, the parts are transported, after washing, into a dip tank where they are coated with a red primer. They are then conveyed through the "dual heat" infra-red oven where the primer coat is dried and baked. In a continuous operation, the parts are then returned to another dip tank where they are conveyor-dipped into black Japan enamel. Following this, the parts pass through the infra-red oven again for final paint baking. After leaving the oven, the parts are conveyed to the cool-down zone, from where they are transported to the final unloading station for the purpose of assembly.

Each dip tank is equipped with casters to enable it to be easily rolled away from the location under the conveyor after parts have been finished in the particular color desired. Various tanks are used to provide the various colors on the parts.

The baking oven was engineered with "nested" lamps to assure even overall baking of the work and to attain a high degree of temperature in a short time. The oven, which is 30 ft. long, utilizes 412 250-watt R-40 lamps. It is ceiling mounted to allow extra room for storage underneath. Special switch boxes permit Triner to have individualized control over the various banks of lights. Thus, Triner can cut off unneeded banks of lights when

# Keep Spindles like New
# Keep Polishing Wheels True
# Avoid Risk to Operators
# Do a Better Job, Too!

The notches hold the bushing in — the wheel *stays concentric regardless of how often changed.*

**Prolong Wheel Life.** Presto Bushings avoid wear to the arbor hole—the wheel *stays concentric regardless of how often changed.* Chattering, uneven wear, burned wheels, and needless truing-up are avoided.

**Save Grain.** Grain wears *evenly* on true-running wheels. Tendency to wear bare in spots is eliminated. A set-up *does much more polishing*—saves the grain and saves time.

**Does a Better Job QUICKER.** A true-running wheel cuts evenly—*does a uniform polishing job faster,* with less effort from the operator.

**Eliminate Spindle Wear.** Presto-equipped polishing wheels slide on and off without running the lathe—no wear to spindle. *A girl can change them quickly, easily and safely.*

**Save Bearings.** True-running wheels avoid destructive pounding and prolong bearing life.

Every day you operate *without* Presto Bushings *costs you plenty.* Write for samples and see the advantages for yourself. Just specify size of spindle on which the wheel will be used.

Jobbers in principal cities.

*Modern as* **RADAR**

**Grain wears off unevenly when wheel does not run concentric. Unused grain on the unworn portion of the wheel must be removed before the wheel is set up again—*both grain and time are wasted.***

**Bare spots on the wheel *wear rapidly and burn.* A set-up does much less work because only part of the grain is used.**

**Specify "*Equipped with Presto Bushing*" when you order Polishing Wheels**

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## *The* MANDERSCHEID *Co.*

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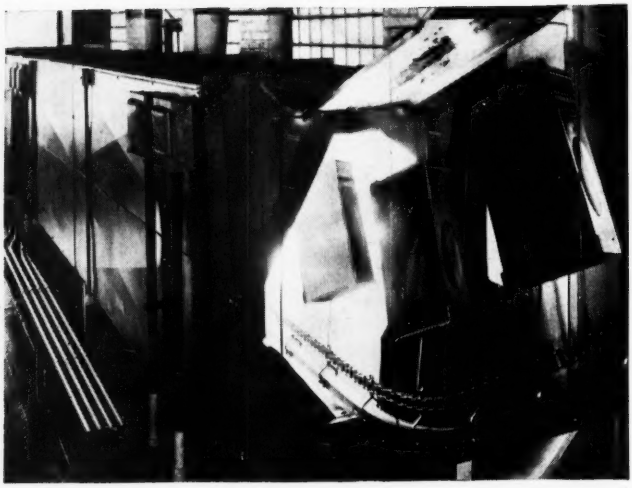

Painted scale parts being conveyed through infra - red oven for baking

small parts are being processed.

Where finishes must be sprayed, the parts are loaded and masked-washed outside a conveyor-operated spray booth employing the same conveyor previously described. The spray booth is located approximately 37 feet behind the large dip tank. The parts move through the booth on the conveyor, are sprayed, and then conveyed through the baking oven. The drying cycle is controlled by a variable speed pulley operated from the motor.

## G-E Zahn Viscosimeter Controls Enamel Viscosity at Cleveland Steel Barrel Company

THE viscosity of the enamel sprayed on metal shipping containers manufactured by the Cleveland Steel Barrel Co., Cleveland, Ohio, is now accurately controlled by the use of a G-E Zahn Viscosimeter. This instrument is designed to simplify the otherwise difficult task of making viscosity measurements.

Until the Cleveland company began to regulate the viscosity of its enamels with the Viscosimeter, the containers often emerged from the drying oven still sticky since the enamel sprayed on them was too thick to dry properly. In other instances, it was found that the enamel was too thin,

G-E Zahn Viscosimeter being used to check viscosity of enamel at Cleveland Steel Barrel Company. In background, 55-gallon steel containers are shown being sprayed at the entrance to drying ovens.

# BUT...

Though it was the pride of the early pioneers, in their push westward, it would be entirely inadequate for present day high-speed, heavy load, transportation needs. Today's huge modern, transcontinental trailer-trucks, testify to the triumph of American progress.

CHEMICALS
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PROCESSES

**RUST PROOFING AND PAINT BONDING**

*Granodine* *
*Duridine* *
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**RUST REMOVING AND PREVENTING**

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*Rodine* *

# *Duridine** is just as remarkable an improvement, in the metal-cleaning field. It cleans—removes oil and grease—and other surface soil—phosphatizes and changes the metallic surface into a non-conductive phosphate film, of uniform crystalline structure—provides a durable bond for organic finishes.

DURIDINE provides extraordinary protection for painted metal surfaces. It is applied by means of mild steel power-spray washers—and is a thorough, speedy and simple process.

* Trade Mark Reg. U. S. Pat. Off.

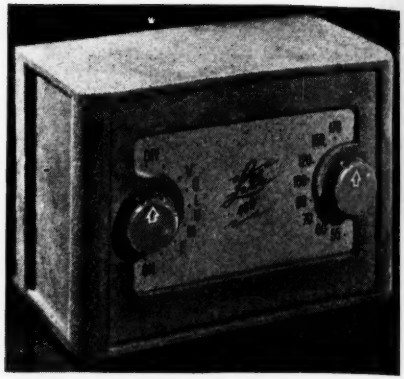
**AMERICAN CHEMICAL PAINT CO.**
**AMBLER** ACP **PENNA.**

thus necessitating respraying many of the containers. Consequently, the efficiency of this important operation was considerably decreased.

The previous trial and error method of thinning enamels to the proper consistency for satisfactory spraying is now no longer relied on. Instead, use of the Viscosimeter has resulted in the establishment of a set of standard viscosities for various types of enamel, regardless of color. In addition, the instrument is also used to facilitate the determination of the correct quantities of thinner and dryer to be added to the enamels in order to obtain a durable and attractive baked finish.

## Radio Features Flock-Finished Cabinet

THE "Lee 400" radio now being manufactured by Jason Electronics, Brooklyn, N. Y., features a rich velvet-like surface on the cabinet which is produced by spraying with a Claremont rayon flock. Although selected primarily to provide a durable, economical finish for a radio to sell in the low price bracket, it was found that both the decorative and acoustical properties of the flocked surface served to advantage.



The cabinet of this radio is provided with a rich velvet-like surface of rayon flock.

Flock is sprayed on both the speaker grille and the housing, providing an appealing finish, available in a choice of 16 different colors. The manufacturer claims that the unusual clarity of tones and voice reproduction is due to the use of flock on the speaker grille.

**Helps for the Electroplater.** A series of five folders designed to assist workers in the electroplating industry is now being made available free to such individuals by the Metallurgical Products Co., 35th and Moore Sts., Philadelphia 45, Pa. Subjects covered include "Problems Encountered in Electro Forming," "Analysis of Copper Sulphate," "Volumetric Analysis of Copper," "Concentration in Acid Copper Baths," and "Chemical Calculations."

An additional five folders are now being prepared and will be offered free upon publication.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**Fan Sizes 12" to 42"**

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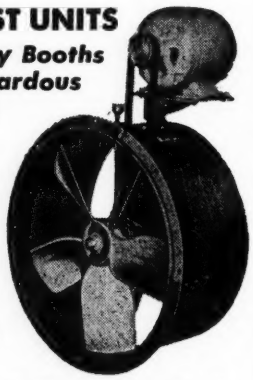

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**Also Manufacturers of a complete line of waterwash and dry type paint spray booths with accessories. *Send for details.***

**M. & E. Manufacturing Co.**
**2571 Winthrop Ave.**
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# Analyzing Anodes

Examination of anodes in service show whether or not you are getting satisfactory corrosion. Corrosion should be uniform over entire surface — there should be no spongy areas. **Nucast** 99+% Nickel Anodes corrode evenly with anode surface remaining hard and firm.

★

Lower overall anode costs are assured by using the best — **Nucast** 99+% High Grade Anodes.

★

Low metallic losses — unusually low losses — only three hundredths of one percent — reduce plating costs.

★

Absence of surface skin on **Nucast** Anodes assures quicker starting and uniform corrosion. You'll also find that if you are troubled by sludge in plating solutions, changing to **Nucast** 99+% Nickel Anodes is a sure way to correct this trouble.

★

The makers of **Nucast** 99+% Nickel Anodes maintain a free analytical and consulting service for their customers.

# NUCAST NICKEL 99+% ANODES

Look for this trademark. It has stood for quality since 1849

BUY FROM YOUR NEAREST NUCAST DISTRIBUTOR

WM. BUCHANAN SUPPLY CO.
237 East 3rd St. Cincinnati, O.

CRAGIN & COMPANY
932 First Ave. Seattle, Wash.

WALTER C. GOLD
235 Race St. Philadelphia, Pa.

HANDLAN, INC.
St. Louis, MO.

J. J. LAMB
800 No. Clark St. Chicago, Ill.

L. S. WOOD
723 W. Onondaga St., Syracuse, N. Y.

WILLIAM H. WILCOX
92 Liberty St. New York, N. Y.

INDUSTRIAL CHEM. & EQUIP. Co.
Builders Exchange Building
Minneapolis, Minn.

FREDERICK GUMM CHEM. CO.
538 Forest St. Kearny, N. J.

J. J. KEHOE
1480 Osceola Ave., St. Paul, Minn.

GEORGE A. KUSHMAN
428 13th St. Oakland, Cal.

HIGH purity, exacting laboratory controls, and testing of individual melts in our pilot plant assure superior performance.

APOTHECARIES HALL CO.
BOX A WATERBURY 88 CONN.

# NEWS of the Industry

## New Research Laboratory and Test Plant for H-VW-M

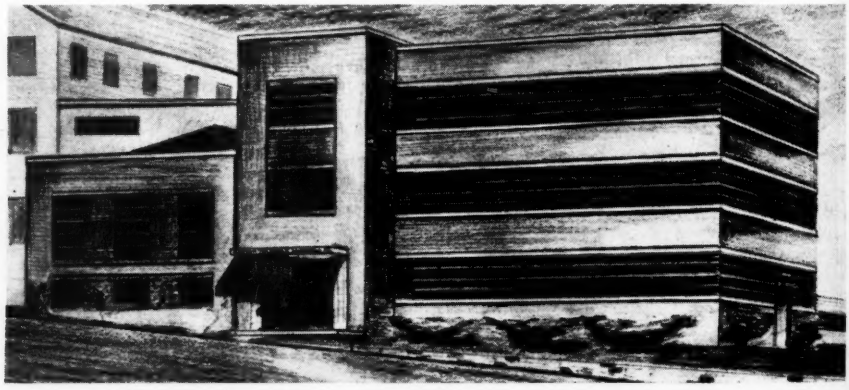
A new research laboratory and test plant is being erected by the Hanson-Van Winkle-Munning Company at the corner of Church Street and Price Street, Matawan, N. J. The new building will incorporate an ideal environment and every facility for conducting research and development of the company's products. The activities of the laboratory will further provide for experimental and test plant operations to establish each customer's specific requirements in equipment and supplies.

The new building, connecting with the present laboratory, will be approximately 50 x 70 feet, three stories in height and constructed of steel framing with buff colored brick walls and continuous window bands around the major perimeter of the building. The floors will be reinforced concrete with various finishes of brick, asphalt, tile, and so on, required to meet special conditions. Heating will be supplied by both direct and radiation and a filtered air forced ventilation system. Lighting will be provided generally by fluorescent lights with intensities varied to suit the requirements of each area.

The main entrance and lobby of the laboratory will house an exhibition of samples and working models of equipment suplied by the company. An office adjacent to the lobby will be provided for the use of engineers and representatives of customers who are visiting or working at the laboratory.

A large area on the first floor of the building will be devoted to the most advanced equipment and facilities for research and experimentation in plating processes of all kinds. Additional laboratories on the first floor will include one for the preparation of special solutions, an enamel and coatings laboratory, a buffing and polishing section, and a corrosion testing laboratory.

The second floor will contain the offices for the director of research and the laboratory staff, a large combination library and conference room, chemical research laboratories, a metallographic



Architectural sketch of new H-VW-M research laboratory and test plant

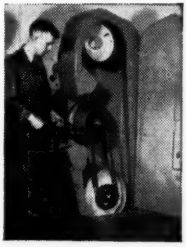
# NOW! YOU CAN GRIND CONTOURS FASTER BY ABRASIVE-BELT MACHINING!

No. 1

**The NEW PORTER-CABLE C-6 CONTOUR BELT-GRINDER**

• Yes, it's *new* . . . and a money-maker if ever there was one. Saves considerable time and expense in preparing a set-up wheel . . . eliminates re-working of the shape . . . eliminates frequent loading of wheel with necessary abrasive material.

## The C-6 Is A Contour Grinder



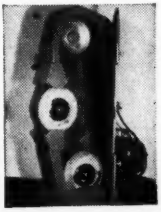
No. 2

• Put on a contact roll as in illustration No. 2. Drive wheel revolves it as your man cuts the form on the composition surface to the desired contour. Then put on your abrasive belt and let her go. The belt folds smoothly into the grooves . . . shapes the work with minimum pressure. Fast . . . quick . . . simple, uniform.

## The C-6 Is A Flat-Face Grinder

No. 3

• For this purpose, operator works on a straight edged contact roll as in illustration No. 3—not a driving wheel. Consequently the cutting is not so "aggressive." The abrasive runs smoothly over the roll; is not affected by motor vibrations. Hence, you get a more even, superior finish.



**The NEW C-6 is faster . . . cleaner . . . better for contour and flat-face grinding.**

• The C-6 is a self-contained unit . . . guarded . . . equipped with dust drawer and outlet. Takes little floor space: only 26" x 38". Mounting of contact roll permits adjustment of roll from zero to 15° in relation to tangent of driven and idler pulleys or to direct line of abrasive belt.

*See Why!* Ask for Latest Literature

**PORTER-CABLE MACHINE CO.**
302-8 Wolf St. Syracuse, N. Y.

(Left) H. L. Ramsay
(Right) Douglas M. Lyon

## Porter-Cable Organization Changes

D. J. Ridings, president, The Porter - Cable Machine Co., Syracuse 8, N. Y., announces the appointment of Douglas M. Lyon as sales manager of the company, succeeding H. L. Ramsey who has been made vice-president in charge of merchandising. Mr. Ramsey has been relieved of much of the detail connected with managing sales so that he may devote more time to planning and to merchandising the company's line of precision machinery.

laboratory, dark rooms, a balance room, and supply rooms. The third floor will be arranged for a suite of offices for the executive officers of the company, a board of directors room, and a conference room. Additional offices will also be provided on the third floor for the laboratory, engineering, and clerical personnel.

## Goble Heads Kelite Activities in Atlantic States

The interests in the Atlantic States of Kelite Products, Inc., manufacturer of industrial chemicals for cleaning and processing, have been taken over by the Kelite Products Co., Flushing, N. Y., under the direction of Gene Goble. At present, the organization consists of 50 trained sales and service personnel. This will be expanded to take care of Kelite's rapidly growing interests on the Atlantic seaboard.

## Howard Engineering Appoints Representative

The Howard Engineering & Manufacturing Company, manufacturer of metal cleaning equipment, cabinet and conveyor-type machines, monorail washers, tumbling, burnishing and deburring machines, and special washing and cleaning machines, announces the appointment of the Bert Carpenter Co., 201 Krim Bldg., Birmingham, Mich., as exclusive representative for the State of Michigan and Northern Ohio.

## A.E.S. Establishes New Research Project

The American Electroplaters' Society has announced the establishment of a new research project on "The Disposal of Plating Room Wastes." This is the tenth of a series of projects which have been set up as fellowships or grants at leading universities and research institutions throughout the country, relating to various practical aspects of the electroplating and metal-finishing industry.

Research Project No. 10 has been located at Yale University, with Professor Barnett F. Dodge, head of the department of chemical engineering, as project director, and D. C. Reams, instructor in chemical engineering, as research associate. The Project Directing Committee consists of Dr. C. Fred Gurnham, chemical engineer, The Whitney Blake Co., New Haven, Conn., chairman; Malcolm A. Orr, electrochemist, The International Silver Co., Meriden, Conn.; and Manley L. Ross, manager of sodium and cyanide sales and development, E. I. du Pont de Nemours & Co., Inc., Niagara Falls.

The project currently comprises an extensive survey and critical review of the existing literature in the field. This will be followed by laboratory and pilot plant investigations and by cooperative work in industrial treatment plants. Progress and final reports will be published in "The Monthly Review," official journal of the Society, and as A.E.S. Research Reprints.

AT LAST!...

A SURE STOP FOR STOP-OFF

MICCROSTOP

FOR SELECTIVE PLATING

High Speed Copper
Cadmium
Tin
Zinc
Silver
Gold
Gold on Silver
Silver on Gold
Nickel
Chrome (Decorative)
Phosphate Coatings
Alloy Solutions

MICCROSTOP stop-off lacquer is the first lacquer to be developed that will hold a hair line of demarcation through boiling cleaners, acid rinses and all selective plating cycles. It permits a degree of accuracy that has never before been possible.

MICCROSTOP stop-off lacquer was developed by the Michigan Chrome and Chemical Company research laboratories from new synthetic resins. It has excellent dielectric strength – is absolutely neutral – will not contaminate any plating solution nor etch the finest polished or lapped surfaces. May be brushed, dipped or sprayed – possesses rapid air-drying qualities.

The plating industry has long needed this sure stop for stop-off – another MICCRO first.

★ WRITE FOR DETAILED BULLETIN ... TRY A SAMPLE AT OUR EXPENSE

MICHIGAN CHROME
and Chemical Company
6340 East Jefferson Avenue · Detroit 7, Michigan

MICCRO

Developed and Manufactured by Experienced Platers

## Alcoa Personnel Changes

The Aluminum Company of America, Pittsburgh, Pa., announces the retirement of George J. Stanley as vice president and general sales manager of the company on July 1, and the elevation to vice presidencies of three assistant general managers; namely, R. V. Davies, R. B. McKee, and Donovan Wilmot. The position of vice president and general sales manager will be filled by R. V. Davies, who suceeds Mr. Stanley.

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## Sales Manager of Industrial Ovens

Richard A. Villacres, mechanical engineer, has been appointed national sales manager over industrial ovens for the metal-fabricating industry by the Despatch Oven Co., Minneapolis, Minn. A graduate of Columbia University and the University of Minnesota, Mr. Villacres has had 21 years of experience in industrial development, promotions, and sales, and was previously connected with The Cincinnati Milling Machine Company and Allis-Chambers Manufacturing Company. He joined the Despatch Oven Company two years ago.

A native of Ecuador, Mr. Villacres' experience in many sections of the country, as well as in the engineering department of the Despatch Oven Company, qualifies him well for his present assignment.

Richard A. Villacres

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## Lupomatic Industries, Inc.

Lupomatic Industries, Inc., has been organized to take over the operations of the former Lupomatic Tumbling Machine Co., Inc., which was established in 1906. The offices and plant will remain at 4501 Bullard Ave., the Bronx, New York, N. Y. Charles W. Yerger, well known for many years in the plating and finishing field, is president and treasurer. Joseph Lupo, who continues with the company as vice president, will have charge of development and research. E. F. Helwig is secretary.

The new firm plans on an extensive expansion program with the introduction of new engineering features to improve and round out its previous line of equipment and supplies. It will continue to specialize in barrels for finishing and polishing, tumbling compounds, and processes for the finishing of metals and plastics through tumbling. The expansion program includes the establishment of distributors throughout the country and an efficient administrative organization at the factory in an effort to improve service to the entire industry.

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## Howard L. Wright Transferred

Howard L. Wright, who joined the Hanson-Van Winkle-Munning Company approximately a year ago after graduation from Franklin and Marshall College and then a period of service as a lieutenant in the Navy, has been transferred from the Philadelphia to the Syracuse, N. Y., office of the company and is making his headquarters at 313 Baker Ave., Syracuse 5, New York.


**For Sale**

•

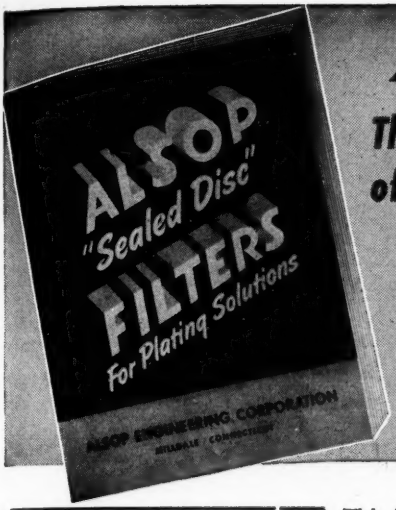
*Slightly Used*

**BUFFS**

LOOSE AND SEWED
ANY QUANTITY
ALL SIZES

•

**MICHIGAN BUFF CO. INC.**
4058 BEAUFAIT AVE.
DETROIT 7, MICHIGAN




# Mr. Plater—

## This New Book on Filtration of Electroplating Solutions

**Based on 25 Years Filtration Experience**

**Was written especially for YOU**

## A SUMMARY OF CONTENTS

**The text outlines the standard techniques widely employed today in plating departments, describes the distinct advantages of using filters in various plating installations and on practically all types of plating solutions. It shows also various types of typical installations in different plants.**

**Explains the unique sealed feature which provides positive protection against loss of solution through leakage and dripping.**

**Describes the versatile, compact Filters and outlines the superior features of the many sizes and capacities available.**

This fact-filled book just off the press was compiled to tell you exactly how, why and where *"Sealed-Disc"* Filters can help you get finer finished plated work from your plating solutions. It contains 50 carefully chosen photos, diagrammatic views and 4500 words describing the *"Sealed-Disc"* Filters and *"Centri-Poise"* Pumps as well as explaining the Fundamentals of Filtration for plating applications.

The *"Sealed-Disc"* Filter for plating solutions was designed in 1939 based on over 17 years previous filtration experience. Now after an additional 8 years of constant improving we feel that our latest models will meet even greater success in fulfilling the demands of the plater for a dependable filtration system. Send for your NEW BOOK today . . . mail the coupon below.

## ALSOP ENGINEERING CORPORATION

**208 KEEN STREET, MILLDALE, CONNECTICUT**

Please send me FREE, your NEW Book *"Alsop Sealed-Disc Filters For Plating Solutions."*

Name .....

Firm Name .....

Address .....

City ..... Zone..... State.....

## Carborundum Purchases Philco Assembly Plant

F. J. Tone, Jr., vice president and general sales manager, announces the purchase by The Carborundum Co., Niagara Falls, N. Y., of the former assembly plant of Philco Corporation at 3345 West 47th Street in the central manufacturing district at Chicago, Ill. The acquired building, after additions and alterations, will become the Chicago sales offices and warehouse of The Carborundum Company and will be under the direction of C. E. Hawke, domestic sales manager, and W. C. McCargo, regional sales manager, with Gordon C. Watson in charge as district sales manager.

The new warehouse is to carry complete stocks of grinding wheels, coated abrasives, abrasive grain, sharpening stones, rubbing brick, and other abrasive products, as well as a stock of refractories, for servicing industries in the Chicago area proper and surrounding territories. Included in the facilities of this thoroughly modern sales office and warehouse will be complete service equipment for the refinishing of grinding wheels and a grinding laboratory for the practical demonstration of coated abrasives. The grinding wheel refinishing shop will be placed at the service of local industries for cutting down wheels, for rebushing of wheels, for recessing and beveling. Complete modern lathe room equipment will be installed in order to efficiently and quickly render such important services.

In addition, a finishing and grinding clinic will be provided, equipped with modern machines where coated abrasive products such as discs, belts, rolls, and so on, will be demonstrated under actual practical working conditions on the grinding and finishing of all types of metals and non-metallic substances.

## B. T. Berry Joins Du Pont

Bedford T. Berry, formerly with the Hercules Powder Co., Wilmington, Del., has joined the advertising section of the Du Pont Company Plastics Department as a technical writer. A graduate of the University of Tennessee with a bachelor of science degree in chemical engineering, Mr. Berry has for a number of years been engaged in technical service and development work on cellulose derivatives for Hercules.


*Any paint stripped from any surface*

**One-tenth the time . . . one-tenth the effort**

**Paint Flushed From Metal With Cold Water Rinse**

Even toughest coatings are quickly flushed off in cold water after applying remarkable TURCO PAINTGON. Simply spray, brush or scrub on. Paint rinses off freely after 5 to 20 minutes. Non-inflammable, non-corrosive.

**Wood Stripped Clean Without Raising Grain**

Amazing new TURCO PAINT-ZIP will not raise grain . . . strips *all* paint layers in *one* application. After wiping off with TURCO L-800, all gum, film and residue are removed and surface is ready for re-painting. Non-inflammable, gives off no dangerous fumes.

*Phone your nearest Turco Field Engineer or write Dept. P. F. 8.*

TURCO

WOOD & METAL PAINT STRIPPERS

TURCO PRODUCTS, INC. Main Office & Factory: 6135 S. Central Ave., Los Angeles 1
Offices & Factories: 125 W. 46th St., Chicago 9 - 1606 Henderson St., Houston 1, Texas
New York Office: 21 West Street, New York 6 - Offices & Warehouses in All Principal Cities
Canada: B. W. Deane & Company Limited, 751 Victoria Square, Montreal 1

There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider price only are this man's lawful prey.

. . . *Ruskin*

PRATT & LAMBERT-INC.
*Industrial Finishes*
NEW YORK BUFFALO CHICAGO
FORT ERIE, ONT.

## Appointed Director of Methods

The Division Lead Company announces the appointment of William E. Karry as director of methods and procedures. His duties will be mainly centered in the promotion of Divco 71-point lead anodes for chrome plating, electrostripping, cleaning, and electropolishing.

William E. Karry

Mr. Kerry is a graduate of Central College where he received a B.S. degree. His previous experience includes three years with the metallurgical department of a United States Steel subsidiary and four years with the Karith Chemical Company.

## Engineering Expert Joins Federal

Howard C. Deckard, 30-year veteran in the production engineering and manufacturing field, has joined the Federal Telephone and Radio Corp., Clifton, N. J., to become general plant manager of Federal's Clifton plant. Mr. Deckard was formerly associated with Manning, Maxwell and Moore, Inc., Muskegon, Mich., as general plant superintendent. His wide experience in engineering and production was developed in various positions with manufacturing concerns, including the Ford Motor Company, both at Dearborn, Michigan, and as general manager of the Ford rubber plantation on the Rio Tapajoz Para, Brazil, S. A.

During two world wars Mr. Deckard carried out assignments in the production and designing of engines and planes. In addition to his engineering skill, Mr. Deckard has written an academic textbook entitled "Shop Mathematics." He also operated his own engineering company, producing precision parts for the automotive industry.

## 21st Exposition of Chemical Industries

Widespread interest has developed in the 21st Exposition of Chemical Industries to be held December 1 to 6 in Grand Central Palace, New York City. The display of processing equipment will be more comprehensive than usual, with many new developments to be disclosed. Chemical industries and chemical processes used in connection with the operation of mechanical industries afford applications of interest to visitors from almost every branch of productive activity. Equipment suitable for some part of almost every kind of manufacturing plant will be readily found in the roster of exhibits.

As heretofore, only accredited visitors will be admitted to the exposition under the invitation and registration system of attendance control, thus ensuring better attention and more complete opportunities for study of the exhibits.

## International Nickel Appointments

Hugh J. Fraser, vice president of The International Nickel Co., Inc., has been placed in general charge of all plant operations of the company in the United States. John A. Marsh, assistant general manager of the Huntington (West Virginia) Works, has been appointed Mr. Fraser's assistant, with the title of assistant to the vice president.

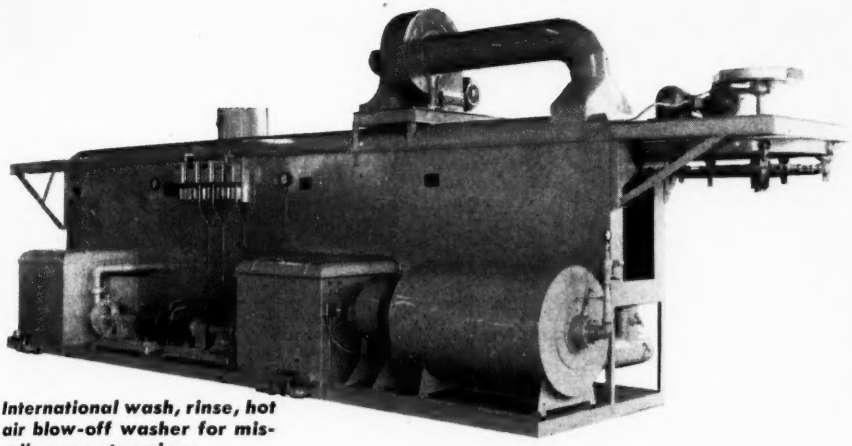
Mr. Fraser, who has been vice president of the company since March of this year, had been an assistant vice president since June 1943. He joined the Huntington Works of the company in May 1923 and after serving for some years in various technical and operating capacities was promoted to the New York office in February 1935, becoming assistant manager of the Production Department. Mr. Fraser received a B.S. degree from Queen's University, Kingston, Ontario, in 1923.

*For a real good polishing job use*

**Keystone TURKISH Emery**

**FRESH SUPPLY AVAILABLE**

KEYSTONE EMERY MILLS *Write for Sample* 4316 Paul St., Phila., Pa.



*International wash, rinse, hot air blow-off washer for miscellaneous stampings.*

# International Washers Provide Maximum Production and Efficiency

## *Washers and units for cleaning and preparing metal surfaces built for every type of business*

● Make International your headquarters for all types of industrial washers. Long experience in designing and building equipment for scores of industries provides the "know how" to solve your problems dependably and quickly.

Illustrated above is an International wash, rinse, hot air blow-off washer built for cleaning miscellaneous stampings. Washer is all gas fired and embodies a monorail conveyor loop complete with drive.

For improved product, high production and economical operation, call on International for your industrial washing machine and metal surface preparation equipment requirements.

***WRITE FOR FOLDER. RECOMMENDATIONS AND QUOTATIONS PROMPTLY SUPPLIED.***

**INTERNATIONAL CONVEYOR & WASHER CORP.**
652 E. FORT STREET • DETROIT 26, MICHIGAN

## Pennsalt Names Two Assistant Production Managers

C. S. Beldin, production manager of the Pennsylvania Salt Manufacturing Company, has announced the appointment of Francis E. Murphy and Henry G. Meyer as assistant production managers. Mr. Murphy was formerly director of development at Pennsalt's Whitemarsh Research Laboratories. His new work will cover chiefly the technical aspects of manufacture.

Mr. Meyer was formerly assistant to the production manager. His work, while technical, will be chiefly concerned with the statistical aspects of manufacture. Mr. Meyer, a graduate of New York University with the degree of bachelor of science in chemistry, joined Pennsalt in 1933. Before coming to the central office he was chemist, chief chemist, and then superintendent at the Greenwich plant. He is a member of the Engineer's Club of Philadelphia.

Mr. Murphy attended Villanova College and graduated from St. Joseph's College in Philadelphia with a degree of bachelor of science in chemistry. He joined Pennsalt in 1943 and formerly was with the General Chemical Company and the Golden Gate Bridge and Highway Department. He is a member of the American Chemical Society and American Institute of Chemical Engineers.

## Dewey Named General Personnel Director

The appointment of George E. Dewey as general personnel director for the Pittsburgh Plate Glass Company is announced by Samuel L. H. Burk, industrial relations director for the firm. Associated with the Standard Oil Company of Indiana for 17 years, Mr. Dewey joined that firm as a research engineer and later organized its technical information division. During 42 war months, Mr. Dewey was given leave by Standard to serve as labor counselor to the Petroleum Administration for War. In October 1945, he returned to Standard as director of research in industrial relations.

Mr. Dewey attended Purdue University and is a graduate of the Colorado School of Mines. He is a member of the American Chemical Society, the American Management Association, and the Chicago Personnel Association.


**THE VARNISH PRODUCTS CO.**

**MAKERS OF**

**CEL-U-LAK Lacquers and Enamels**

**FORM-A-ROC—alkyd-amine enamels**

**ALSO**

Bronzing vehicles, adhesives and other specialties for the industrial finishing of wood, metal, ceramics and plastics.

**5206 HARVARD AVENUE**
**CLEVELAND, OHIO**


## Nuodex Promotions

Promotion of A. C. Mueller and J. W. Van Tuin to the newly created positions of sales managers of the Eastern and Western Divisions, respectively, of the Nuodex Products Co., Inc., Elizabeth F., N. J., is announced by H. M. Johnson, vice president in charge of sales.

Mr. Mueller, who was formerly sales manager of the North East Central Region, is a graduate of the School of Business Administration at the University of Notre Dame. Prior to his connection with Nuodex in 1940, he had covered the midwestern and southeastern states for five years for the Jones-Dabney Company. Previously, he had been employed by the Lilly Varnish Co., Indianapolis, Indiana.

A graduate of the University of Illinois, Mr. Van Tuin, before his new appointment, was sales manager of the North Central Region. He is chairman of the Membership Committee of the Chicago Paint, Varnish and Lacquer Association. He came to Nuodex in 1940 from the Sherwin-Williams Company where he had broad experience in paint formulating and in paint raw material sales.

## We Make...
# All Types of Rack Insulation

- Baking type plastisol — one or two coats provides an extremely heavy and tough insulation which stands up in all plating solutions with insulation life measured in months instead of weeks. BUNATOL No. 1000
- Solution type air dry insulation. For quick low cost insulation that air dries fast and gives long insulation life. BUNATOL No. 160 and No. 785
- New low temperature bake primer with fast air drying coats over the primer; makes an extremely interesting low cost insulation which has unusual adhesion and remarkable insulation life with decidedly less expense. BUNATOL No. 609
- A new *one coat* lacquer to stop corrosion on tanks, machinery, fume ducts, etc. One coat gives protection actually expected from three coats of usual materials. BUNATOL Lacquer No. 731
- Stop Off for selective plating. BUNATOL No. 474 Red for Chrome and BUNATOL No. 608 Green for Copper or Chrome.

**GET THE FACTS - - - and PRICES TODAY**

***You Will Save Money***

## NELSON J. QUINN COMPANY
**TOLEDO 7, OHIO**

# BUNATOL

## Company Headquarters Moved

The Carbomatic Corporation, manufacturer of infra-red equipment, is moving its headquarters from 117 W. 63rd St., Manhattan, to its own building in the Long Island City section of New York City. Transfer of the shop department to the new Long Island City brick and steel plant situated at 24-81 47th Street will soon be completed. A total of 5,000 square feet of floor space is available. Removal of other departments, including the executive offices, will follow, although the company expects to maintain a branch sales office in Manhattan.

Manufacturing and engineering facilities will be expanded. An enlarged advisory service is also being set up to provide effective guidance to industrialists exploring the modern techniques of heat processing with infra-red.

## Du Pont Establishes New Section

A new section has been established in the sales division of the Du Pont Company's Ammonia Department to specialize in service to the plastics, adhesives, finishes, and wood industries. J. D. Shaw, who has had wide experience with Du Pont since joining the company as a chemist in 1929, will be in charge of the new section as sales manager. Mr. Shaw, formerly district manager of the Chicago office of the Ammonia Department's Standard Products Section, will be succeeded there by Newton T. Beck, who has been serving as assistant branch office sales manager.

In other changes in the Ammonia Department's sales division, G. J. Courtney, district manager of the Philadelphia office of the Standard Products Section, has been named assistant sales manager of that section effective August 1. His headquarters will be in Wilmington. He is succeeded at Philadelphia by J. C. Moore, who has been assistant district manager.

## Interchem Finishes in New Eastern Location

Effective July 14, 1947, Interchemical Corporation, Finishes Division, has established Atlantic District headquarters for sales and purchasing at 57 State St., Newark 2, N. J. In the modern five-story brick and concrete building on this property will also be housed the Atlantic District Laboratories as soon as the necessary physical facilities can be installed.

Through this consolidation of sales, purchasing, and technical departments, there will now be housed under one roof the personnel responsible for servicing the Eastern accounts of the several units comprising Interchem Finishes; namely, Ault & Wiborg, Murphy Finishes, and Roxalin. In addition, the administrative staff of the Finishes Division of Interchemical, whose responsibilities are national in scope, has moved from the Empire State Building, New York, to the new State Street, Newark, address.


**HARRISON**
**4A**
**COMPOUNDS**
**for**
**BUFFING and POLISHING**

FASTER CUTTING — ECONOMY
INCREASED PRODUCTION
ON

- **CUTTING**
- **CUT AND COLOR**
- **MIRROR FINISHING**

Send Us Your Problems
We'll Send Samples

*Quality and Uniformity Always*

**HARRISON & CO., INC.**
**Haverhill** **Mass.**



**GOLD PLATING SOLUTIONS**
***In All Colors***
**Guaranteed 100% Pure Gold Content**
**Troy Weight - Color Constant**
**Tarnish Resistant**
**Proven Quality by the Acid Test**
***Write or call our experts about your plating problems***

**Davis-K-Products Co.**
**54 West 22nd St., New York 10, N. Y.**
**Oregon 4-4108**
**4-4109**

## FOR MIRROR FINISH . . . Siefen

# BUFFING NU SPRA GLU

BUFFING Nu Spra Glu, a grease and abrasive mixture, sprays to wheel, cuts compound consumption in half and buff wear one-third. Available in emulsion or oil-base types.

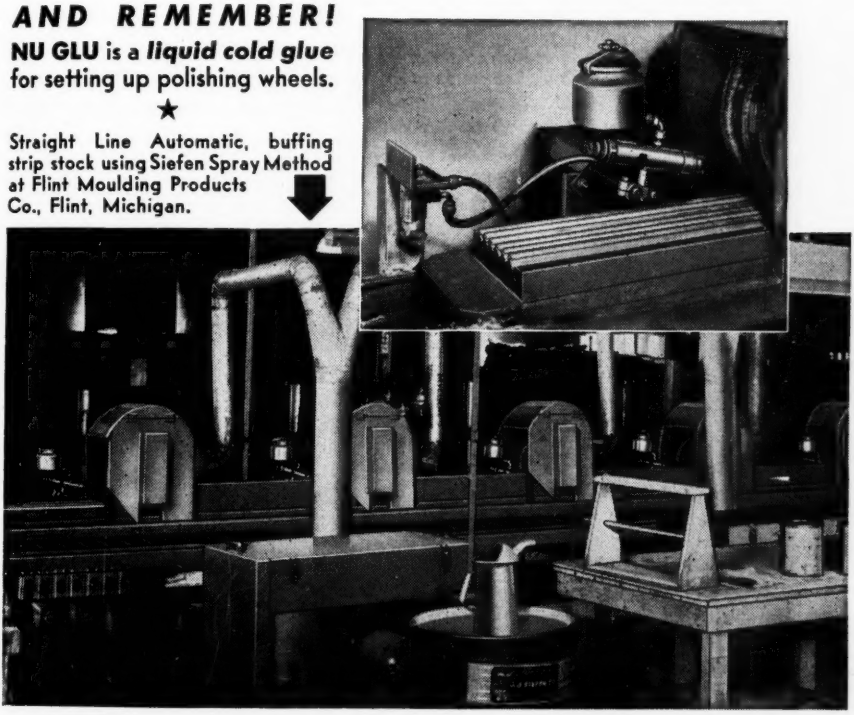
For satin finish—Nu Spra Glu. A liquid cold glue and abrasive mixture that dries instantly when sprayed on a revolving wheel.

***AND REMEMBER!***

**NU GLU** is a ***liquid cold glue*** for setting up polishing wheels.

★

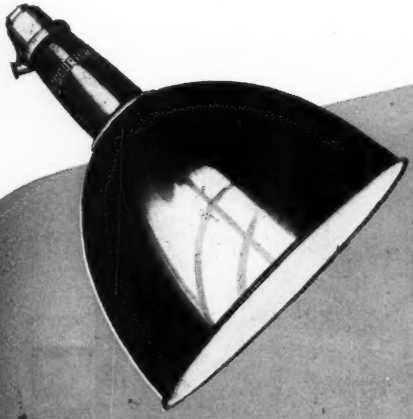
Straight Line Automatic, buffing strip stock using Siefen Spray Method at Flint Moulding Products Co., Flint, Michigan.



**J. J. SIEFEN COMPANY**

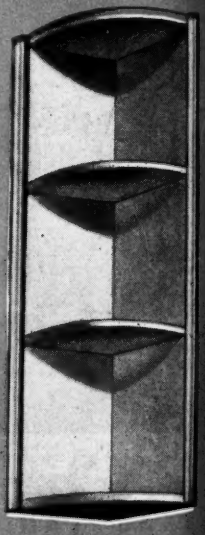
**5633 LAUDERDALE • DETROIT 9, MICH.**

# finishes that aid in appearance and utility



The lighting reflector shown herewith is made of "enameling iron" to which has been applied three coats of vitreous-fired porcelain enamel featuring high reflective efficiency, as well as permanence. The finish can be readily cleaned by simply wiping with a damp cloth.

*(Photo courtesy Goodrich Electric Co., Chicago 41, Ill.)*



A gleaming white Hi-Bake enamel finish is a feature of the all-steel 30-inch high Youngstown kitchen what-not shelf illustrated herewith, thus enabling it to match other modern kitchen equipment.

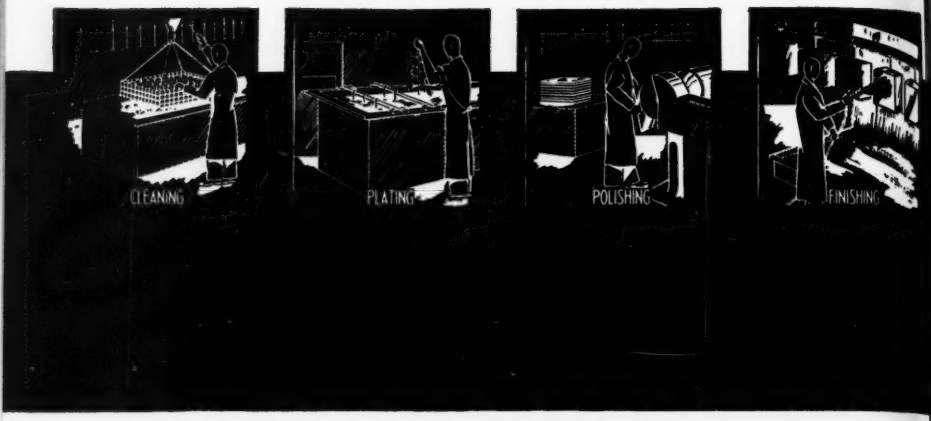
*(Photo courtesy Mullins Manufacturing Corp., Warren, Ohio)*

Designed to provide a convenient and efficient means for writing, marking, and drawing on paper, glass, wood, wax, metal, cloth, leather, and cellophane, the "Fountainbrush" shown herewith is attractively finished in satin aluminum.

*(Photo courtesy Cushman & Denison Mfg. Co., New York 11, N. Y.)*

Chromium applied over nickel-plated aluminum provides a permanent non-tarnishable finish to these utensils.

*(Photo courtesy Aluminum Company of America, Pittsburgh 19, Pa.)*



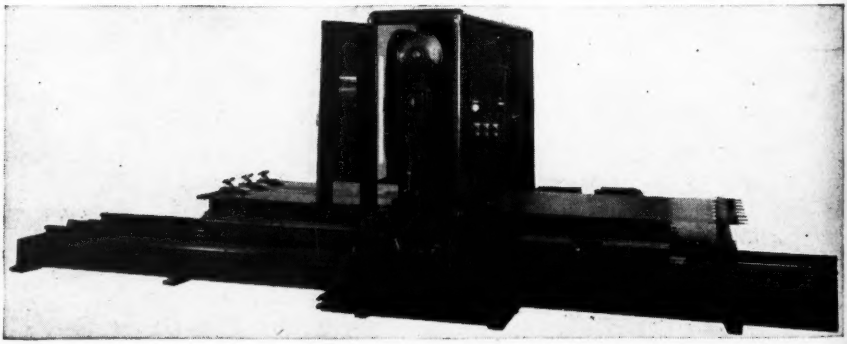

## Hill Two-Roll Vertical Abrasive Belt Grinding and Polishing Machine

The Hill Acme Co., 6439 Breakwater Ave., N. W., Cleveland 2, Ohio, has introduced a two-ton vertical abrasive belt grinding and polishing machine for the flat polishing of ferrous and non-ferrous metals and other materials. The machine is available in three genera. types; namely, (1) strip type for processing strip material in coiled form, (2) plate or bar type which incorporates the use of feed or pinch rolls for conveying the material under the polishing head, and (3) sheet type with reciprocating hydraulic table drive.

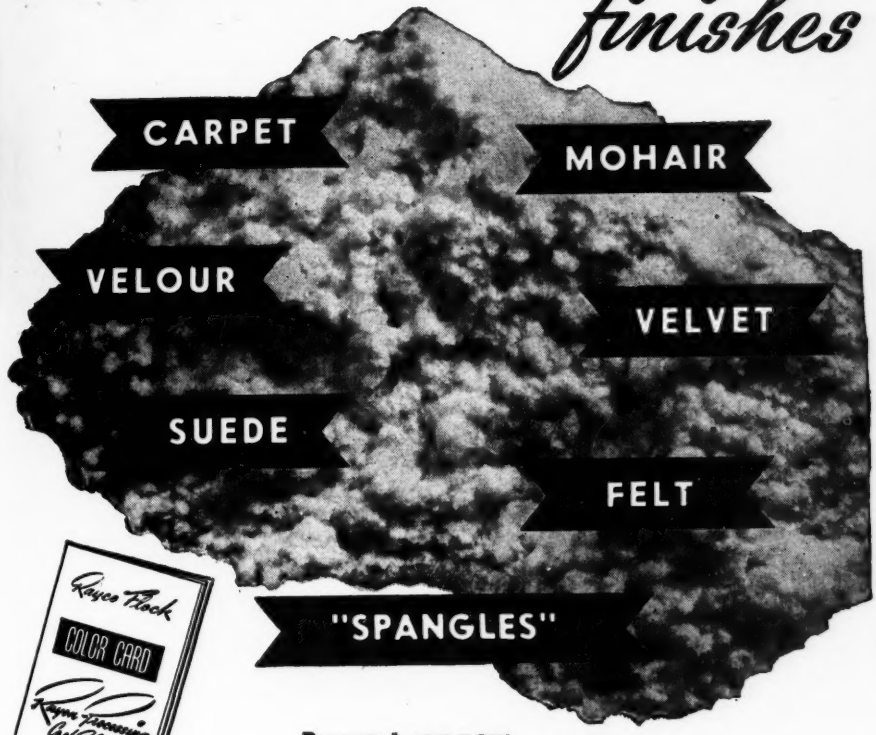
Simplicity of design and construction has been accomplished throughout the machine by the use of welded steel in all principal parts. The machine is built in a progression of widths up to a maximum of 60 inches. Endless coated abrasive belts 10 feet 6 inches long are utilized on the unit.

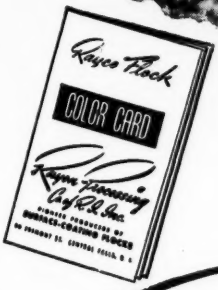
The two-roll vertical polishing head is the same for all three types of machines, and consists basically of a dynamically balanced upper steel idler roll and a lower rubber covered contact or work roll, over which the abrasive belt travels. The rubber-covered contact roll being the driving roll is said to eliminate slippage of the abrasive belt, thereby increasing belt life. A steel billy roll located directly below the contact roll is raised and lowered through the employment of air cylinders. A "Hill" pneumatic belt center-

Hill Two-Roll Vertical Abrasive Belt Grinding and Polishing Machine



# Rayco Flock synthetic finishes

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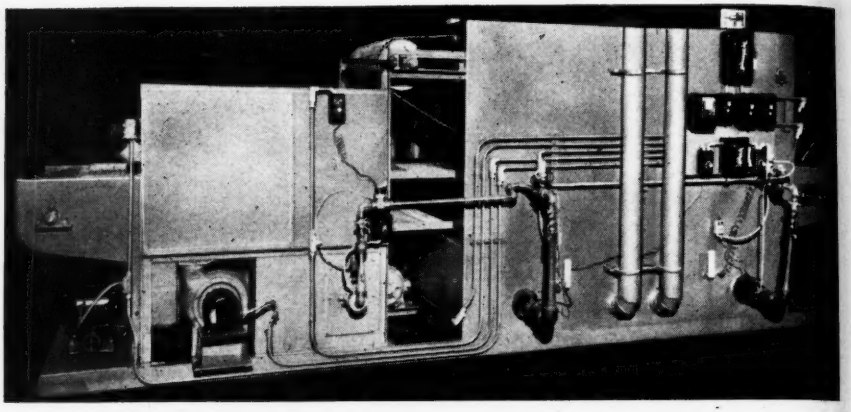

Mabor Triple Stage Washing Machine

ing device is said to assure positive tracking of the belt, irrespective of dust, moisture, or other disturbing conditions.

Both the plate and strip type machines are designed or can be adapted for multi-stage processing, whereby a group or battery of machines can be placed in series for continuous polishing.

Some of the outstanding features of the Hill Two-Roll Abrasive Belt Grinding and Polishing Machine are as follows: (1) all controls are centralized and readily accessible; (2) no separate grinding machine is required to redress the work roll, which can be accurately redressed in place at running speed by using a steel redressing plate regularly furnished as standard equipment; (3) the Hill pneumatic belt centering device is adjustable to accommodate various abrasive belt widths; and (4) the possibility of damage and excessive time required in changing long abrasive belts are reduced to a minimum through the employment of belts 10 feet 6 inches long.

## Mabor Triple Stage Washing Machine

A triple stage washing machine has been developed by the Mabor Co., Clark Township, Rahway, N. J., for the processing of light, small, cup-shaped stampings of comparatively uniform depth. The design of the equipment provides a washing stage, a rinsing stage, and a section wherein the parts are dried. The hold-down conveyor can be adjusted to accommodate various types of parts, so that high, continuous production can be achieved.

The machine illustrated is gas heated by means of immersion combustion burners, although any heating method can be utilized. Any one of the three processing stages can be eliminated or additional processing stages may be added in order to bring parts nearer the point where they can be used for assembly.

Pumps are close-coupled, and the air heat device is direct-fired, although indirect firing may be substituted, if required. In order to ensure maximum safety in the operation of the equipment, it is fully equipped with automatic safety devices for gas burners and temperature controls.

## Baker Gold Plating Solutions

Baker & Co., Inc., 113 Astor St., Newark, N. J., announces the addition of a new series to its line of gold plating solutions. Included are concentrated gold plating solution No. 319 containing one troy ounce of fine gold; concentrated gold replenishing solution No. 320 containing one troy ounce of fine gold; concentrated underplate or strike No. 321S containing one-half ounce of fine gold; and gold coloring solutions for light yellow, red, and green gold.

An instruction booklet for the use of the above gold plating solutions is available from the company.

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**There are over 57 builders of industrial ovens and 30-odd manufacturers of metal parts washers, but only Peters-Dalton makes the patented *"Hydro-Whirl"* Spray Booths.**

***"Hydro-Whirl"* has no nozzles to clog or foul and no nested "zig-zag" eliminators to clean.**

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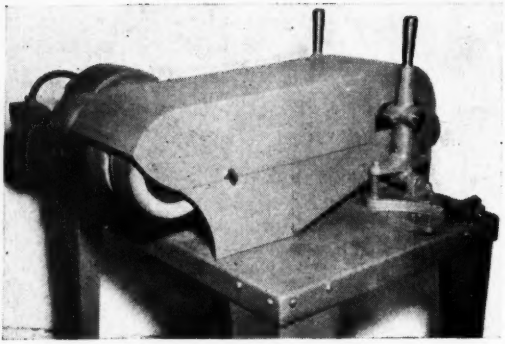
HYDRO-WHIRL DUST COLLECTORS AND SPRAY BOOTHS—INDUSTRIAL OVENS, WASHERS AND VENTILATING SYSTEMS



Porter-Cable Model DBS Double Belt Bench Grinder

## Porter-Cable Model DBS Double Belt Bench Grinder

The Porter-Cable Machine Co., 300-7 Wolf St., Syracuse 8, N. Y., announces the addition to its line of precision abrasive belt grinders of a double belt bench grinder designated as the Model DBS. A heavy duty drive shaft mounts two sturdy 7-inch diameter x 2½-inch wide resilient contact rolls located side by side and only inches apart. Each contact roll is aligned with an idler adjustable for abrasive belt tension, tracking, and lining up with the contact roll. This setup provides for the use of two endless metal cutting abrasive belts 2½ inches wide x 60 inches circumference.

The result is a two-station grinder; one station can be fitted with a coarse abrasive belt for rough grinding, the other with a fine grit belt for finishing. Since both stations are very close together, the operator is not required to move back and forth from one side of the unit to the other to perform the different operations. In addition, the resilient roll receives little, if any, wear. All work is done by the millions of sharp cutting abrasive grains almost entirely exposed, with no binder or filler to interfere with its full cutting capacity. Abrasive belt change when required can be accomplished in a few seconds and, since the cirference of the belt is unusually great, heat is dissipated.

The Model DBS equipped with a 1 h.p. motor provides the abrasive belt a cutting speed of 5,200 surface feet per minute. A dust guard designed so that dust follows naturally to an outlet in the rear of the unit is furnished as standard equipment. Accessory items available include an 8-inch diameter contact roll, 29-inch high or 12-inch low leg assemblies, and a wire brush attachment.

Ideal for working all types of metals, the Model DBS is said to perform equally well on such operations as burring gears, generating radii, weld grinding, removing flash, flat and edge work, and all types of clean-up and polising operations. The entire unit is ruggedly constructed and is said to operate free of vibration.

---

## Barber-Webb "Paraline" Protective Coatings

The Barber-Webb Co., 8686 Rheem Ave., South Gate, Calif., is now marketing a series of protective materials, known as "Paraline," for use as coatings on plating racks, drums, and tanks, as well as for covering dip baskets, anode saver baskets, and acid buckets.

Properly applied, Paraline No. 1 and Paraline No. 9 (vinyl) are said to offer protection against all acids and are currently being used in all types of plating operations. According to the manufacturer, Paraline No. 1 has withstood lengthy tests under various operating conditions, including solutions of hydrofluoric and nitric acids, as well as sulphuric acid copper plate solution, and is being successfully used as a lining for chrome plating tanks.

Paraline No. 24, another vinyl, is widely used as an acid-resisting material for coating the outsides of tanks. The Paraline series comprises a variety of materials, including some phenolic coatings.

---

## Torit No. 122 Dust Collector

Measuring 9 feet 7 inches high overall x 62¼ inches wide x 26 inches front to back, the Torit No. 122 Dust Collector illustrated herewith, product of the Torit Manufacturing Co., 314 Walnut St., St. Paul 2, Minn., is designed to suction through one 1-inch inlet, developing a capacity of 1,500 c.f.m., an air velocity of approximately 6,000 f.p.m., and a static

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**SOL-KLEAN** is used to prepare steel and aluminum for painting. Rust, oxide and oil are removed and corrosion producing agents are neutralized by it. Also, Sol-Klean etches the metal and gives it a thin phospate coating.

For use one volume of Sol-Klean is diluted with 2 or 3 volumes of water. The resulting solution is usually brushed on the metal at room temperature. It adheres to the oily surface, penetrates the oil and mixes with it, and dissolves the rust. Then the Sol-Klean is removed together with the dissolved oil and rust by wiping with rags or flushing with water.

Metal may also be cleaned and treated by immersing it in hot Sol-Klean and rinsing it in water. Sol-Klean is non-inflammable and no noxious or corrosive fumes are evolved.

Sol-Klean is easy to use and can be made an integral part of your production line.

*Metal treating and cleaning chemicals for 25 years*

**INDUSTRIAL CHEMICAL PRODUCTS CO.**

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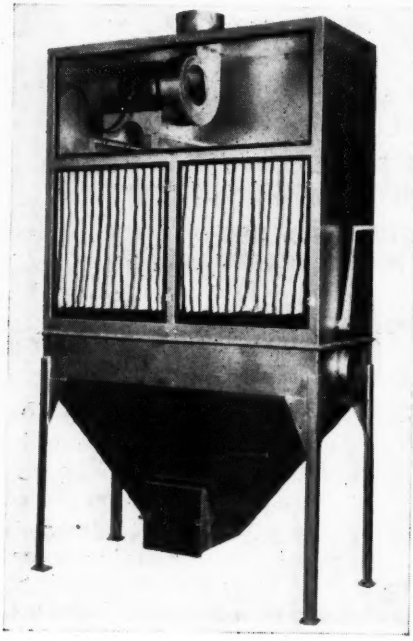
pressure of 3¾ inches. Equipped with 30 filters, each 24 x 30 inches, the unit has a total filter area of 300 square feet, resulting in a 5-to-1 filter velocity (5 c.f.m. through each square foot of filter cloth).

The motor in the No. 122 unit is a 3 h.p., 3,450 r.p.m. type. Exhaust air may be discharged through the top of the collector or through the back panel, if desired. A 7-inch inlet hole is cut on each side and in the back of the unit. Whichever two inlets are not used are covered. A 7 x 5 x 5-inch reducing Y can be provided for the inlets. An inlet adapter is furnished to deflect incoming dust-laden air to the hopper beneath the filters. Heavy dust particles are thus deposited in the hopper, while lighter particles move on with the air stream and adhere to the cloth filters.



Torit No. 122 Dust Collector

## Ahcoloid Cleaner No. 200

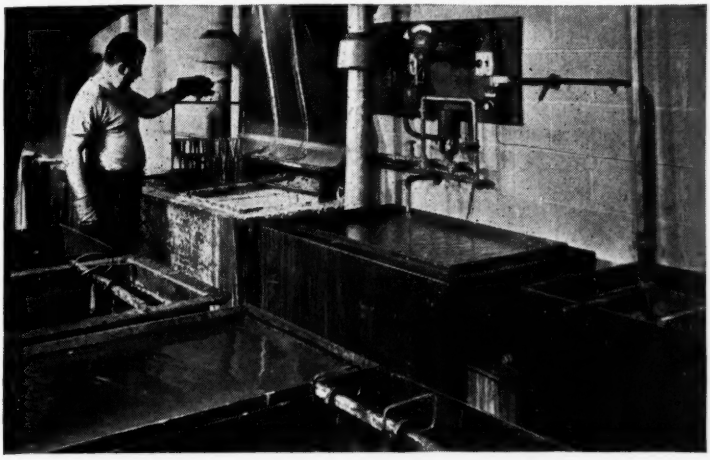
Designated as Ahcoloid Cleaner No. 200, a free-flowing, dry uniform alkaline powder which is said to be completely soluble in water, forming free-rinsing solutions, is announced by the Apothecaries Hall Co., Waterbury, Conn. The material can be used for anodic or reverse current cleaning of steel, copper, or copper plated steel in preparation for electroplating or other finishing operations. It is said to quickly and thoroughly remove grease and soluble dirt resulting from buffing, stamping, polishing, grinding, cutting or drawing operations, and to quickly and thoroughly remove general soil and oil conditions resulting from shop exposure. It is claimed to function exceptionally well in the removal of soluble smut composed of carbon residues, metal particles, and similar matter.

Wetting agents are incorporated in the make-up of Ahcoloid Cleaner No. 200 to impart unusual penetrating and wetting properties. Special alkali and acid-resisting wetting agents are used. The material is said to possess a high degree of emulsifying power and to contain agents permitting its use in hard water. Moreover, the cleaner is said to possess the high conductivity necessary to permit the passage of high current. The large volume of gasses generated when current is passed through the solution gathers at the surface of the solution where it is controlled by agents which create a foam on top of the solution. This foam is said to be sufficient to prevent sprays of the caustic solution from being carried into the air and at the same time does not build up excessively with resulting overflow of the solution, it is claimed.

## "Liquid Envelope" Spray-Booth Coating

Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J., announces that "Liquid Envelope" peelable plastic film is now being supplied in a special formulation for coating spray booths. The material is sprayed on the clean booth in a film 0.002 to 0.005 inch thick. When the booth is ready for cleaning, the coating can be readily peeled off down to the metal in large sheets, carrying with it all accumulated paint, lacquer, and spray dust.

According to the manufacturer, a 6 x 6-foot spray booth can be stripped clean in less than 5 minutes and recoated in the same time. No scraping is required; the plastic film is said to peel as simply and as easily as a banana.



*A Typical Black-Magic Installation*

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There are other BLACK-MAGIC baths for zinc, copper, brass and bronzes. Samples and full information sent on request.

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## Vinyl Resin-Base Wash Primer

The Bakelite Corp., 300 Madison Ave., New York 17, N. Y., announces Vinyl Resin-Base Wash Primer, a coating which serves as a metal surface conditioning agent and primary coat for temporary protection prior to painting and is said to provide unusual adhesion to steel, galvanized iron, aluminum, and other metals. The Wash Primer is a solution of Vinylite Brand resin XYHL—a vinyl butyral resin—in alcohol, pigmented with a relatively insoluble zinc chromate. Phosphoric acid is reacted with this solution to produce a complex material which serves as a chemical protective coating and also provides a satisfactory base for the entire paint system. An excellent bond between the Wash Primer and subsequent coats of conventional paints, such as those based on certain vinyls, phenolic, alkyd resins or nitrocellulose, is said to be obtained.

Since the vinyl butyral resin is not dependent on either oxidation or polymerization for hardening, subsequent coats of paint may be applied as soon as the solvent has partially evaporated—usually 10 to 20 minutes, depending upon temperature and ventilation. Optimum film thickness ranges from 0.3 to 0.5 mil.

The Wash Primer, either air-dried or low-baked, is claimed to provide excellent adhesion with a fair degree of flexibility when applied to steel, aluminum (anodized and unanodized), tin, galvanized iron, stainless steel, and similar metals. According to the manufacturer, best results are obtained on clean metal, although the water-miscible nature of the alcohol solvent will permit the use of Wash Primer on moist surfaces. Applications, it is claimed, may be made over wide temperature ranges with no difficulty so long as the temperature and method of application are considered in choosing the alcohol used as the solvent. The coating can be applied by any of the standard methods—spray, brush, or dip—with no special equipment or technique required.

---

## "Dustkop" Model No. 330 Dust Collector

A portable bench-type dust collector for laboratory and similar small shop dust collecting from buffers, polishers, grinders, and other equipment has been added to its line of "Dustkop" dust col-

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For a superior finish on your product use polishing wheels or bobs cut from walrus hide. There is no other agent known that can produce a cleaner, smoother, richer finish on metal! Its close firm grain, tough fibre structure and natural abrasive qualities form the unique combination that can give your product that quality manufactured look. Write today for more particulars.

*Wheels or bobs of any size can be cut from walrus hide in thicknesses from 1/4" to 1 1/4".*

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Dust-laden air in your shop brings protests from workers . . . makes itself felt continuously in your profit.

Pioneered by Kirk & Blum, Down Draft Dust Control Systems offer new cost reduction in castings cleaning (note illustrations below). The dust produced in grinding, chipping and other operations is removed as soon as formed. Modern K. & B. Systems work so effectively that frequently cleaning operations are carried on in the same department with precision tools.

Whatever your problem in dust control, call in Kirk & Blum . . . 40 years of experience . . . yours for the asking. The Kirk & Blum Mfg. Co., 2816 Spring Grove Ave., Cincinnati 25, Ohio.

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***An Organization of Engineers and Mechanics***

*Left:* Grinding castings in R. K. LeBlond Machine Tool Co., Cincinnati, O.

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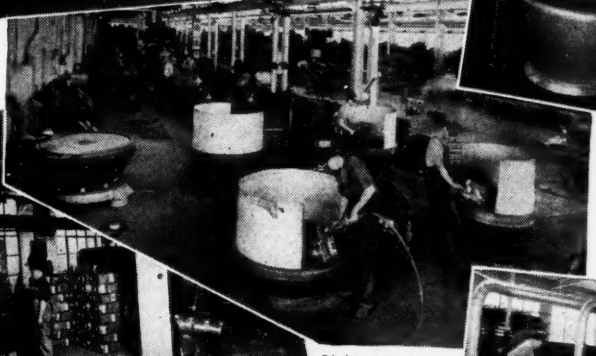
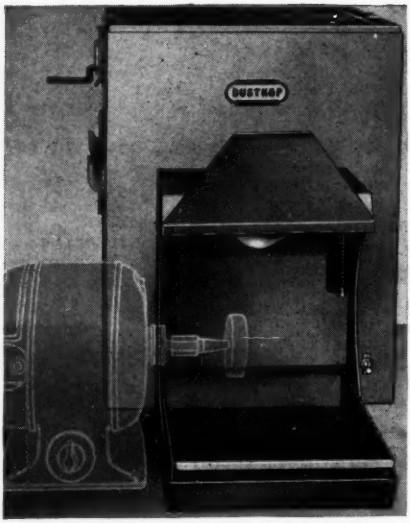
*Right:* Grinding operation at the Cincinnati Bickford Tool Co., Cincinnati, O.

*Below:* Surface grinding at Hobart Bros. Co., Troy, Ohio.



*Center:* Monarch Machine Tool Co., Sidney, Ohio.

*Right:* Cincinnati Shaper Co., Cincinnati, Ohio.




"Dustkop" Model No. 330 Dust Collector

lectors by the Aget-Detroit Co., 211 Main at Washington St., Ann Arbor, Mich. Especially suited for laboratories where space is extremely limited and where quiet operation yet proportionately high dust storage is required, the unit, which is designated as the Model No. 330, is entirely self-contained and requires no installation other than simply placing it in position on the bench and plugging into a light outlet.

A ¼ h.p., continuous duty 1,745 r.p.m. motor for operation on 110 volts, single phase power drives a paddle-wheel fan which is said to be capable of clearing chips and dust resulting from grinding, lint and strings resulting from polishing and buffing, as well as sludge from pumice and other wet finishing operations. The hood on the Model No. 330 has a baffle, light fixture for illumination of the work, and two removable trays for easy emptying of debris which drops from the work. A flap on the leading edge of the hood reduces wheel carry-over. A toggle switch mounted on the front of the cabinet is conveniently located for quickly starting and stopping the motor.

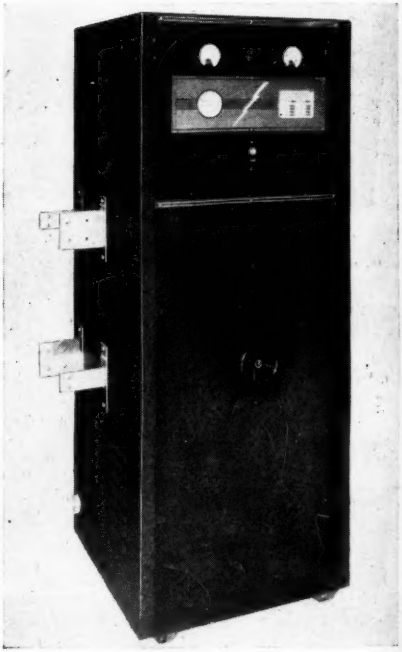
Removal of the collected dust and dirt is effected by means of a drawer from the left side of the unit. A hand crank on the side of the unit immediately above the dust drawer permits a quick and easy "shake-down" of the spun-glass filter material, which can be economically and easily renewed after repeated shakings and following long intervals of service. Gold and other precious metals can be reclaimed from the unit by removal of the dust from the collecting pan and also by melting it out of the spun-glass filter material.

The Dustkop Model No. 330 Dust Collector measures 12 x 14 x 18 inches high. The hood and pan extend 13 inches in front of the cabinet. The unit weighs approximately 65 lbs. and is finished in a neutral green-gray enamel.

## Richardson-Allen Selenium Rectifier with Tap Switch Control

A selenium rectifier with tap switch control is now being offered by the Richardson-Allen Corp., 15 W. 20th St., New York 11, N. Y. Self-contained models, which include basic rectifier equipment, motors, and shunts, incorporate tap

Richardson-Allen Selenium Rectifier with Tap Switch Control



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# **"NEW IDEA"** to his nephew

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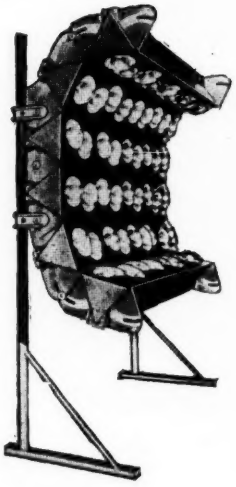
switches for 6, 9, and 12 volts for 500 and 1,000-ampere capacity; 6 and 9 volts for 1,500-ampere capacity; and combination 6/12 and 9/18 volts for 1,000/500-ampere capacity. Separate remote controls employ tap switches from 12 volts-500 amperes to 6 volts-5,000 amperes.

A special Richardson-Allen three-gang switch is said to afford the added advantage of one control for making voltage adjustments. Voltage taps are in approximately 1-volt steps. The d.c. output of the rectifier is not broken with the tap switch control, it is claimed.

## Wil-Son "Patent-Flex" Infra-Red Drying Unit

Offering completely enclosed and insulated sections, thus assuring maximum efficiency and heat control through combined radiation and convection heating, an infra-red drying unit to be known as the "Patent-Flex" is now being marketed by the Wil-Son Manufacturing Corp., 152 W. Erie St., Chicago, Ill. The unit is said to provide 100 per cent flexibility as to size and shape of the oven, as well as three-minute adjustment for adoption to different products.

The Wil-Son Patent-Flex Infra-Red Drying Unit is available in small sections



Wil-Son "Patent-Flex" Infra-Red Drying Unit

utilizing as few as four lamps up to extremely large sections such as for the automotive industry.

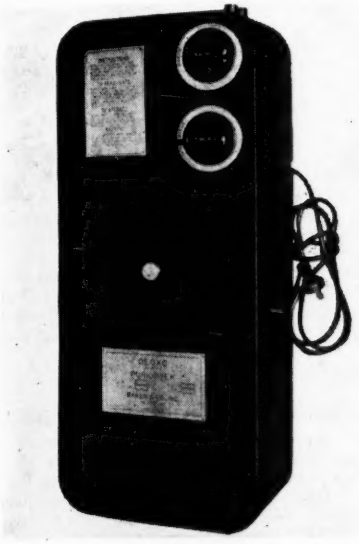
## Du Pont Electropolishing Solution

E. I. du Pont de Nemours and Co., Inc., Wilmington 98, Del., has announced an economical method for polishing stainless steel. Not expected to entirely displace mechanical finishing, the method makes use of a solution of glycolic acid, sulphuric acid, and water which is said to remain liquid at room temperature and can be operated over a wide range of current densities.

Non-technical operators can, it is claimed, easily control and maintain the method at peak efficiency, and the non-freezing characteristics of the solution provide for the elimination of temperature maintenance during periodic or week-end shutdowns. The equipment used in electropolishing is substantially the same as for electroplating. An operating manual entitled "Du Pont Electropolishing Solution" is available from Du Pont.

## Deoxo Puridryer

Known as the Dexo Puridryer, an automatic device which is designed to remove oxygen impurities and eliminate moisture from gases has been introduced by Baker & Co., Inc., 113 Astor St., Newark 5, N. J. Installed at any convenient point on a low-pressure line, the device purifies such gases as hydrogen so that less than one part in a million of oxygen impurities remains, and then dries the gas to dew points of better than minus 50 deg. F. It may also be used with such gases as nitrogen, argon, neon, and saturated hydrocarbons.



Deoxo Puridryer

The Deoxo Puridryer is encased in a black wrinkle-finish housing on which are located two operating dials and a green pilot light. To reactivate, the upper dial is turned to close off the gas flow to the furnace. The lower knob is used to start the timing cycle, heat the drying chamber and allow a small flow of gas to pass through the dryer. The small gas stream becomes saturated with water before passing through a newly-developed Deoxo Converter which combines the purging gas with the water vapor so that only water vapor will be expelled to the atmosphere. When reactivation is complete, the green light glows to indicate that the unit is ready for use.

The capacity of the Deoxo Puridryer depends upon the moisture content as well as the impurity of the incoming gas, which varies with each installation. According to the manufacturer, the catalyst used in the purification phase never requires reactivation and should last indefinitely unless poisoned by sulphur compounds, carbon monoxide, or some organic solvent vapors.

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## Cambridge Industrial Model Direct-Reading pH Meter

Unique design and rugged construction are features of an industrial model direct-reading pH meter for measuring acidity and alkalinity announced by the Cambridge Instrument Co., 3204 Grand Central Terminal, New York 17, N. Y. As a laboratory instrument, the unit can be used at a bench or table for the testing of small samples. As a portable instrument for making spot-checks, its weight of only 10 lb. and the mounting of the electrode system as an integral part

Cambridge Industrial Model Direct-Reading pH Meter

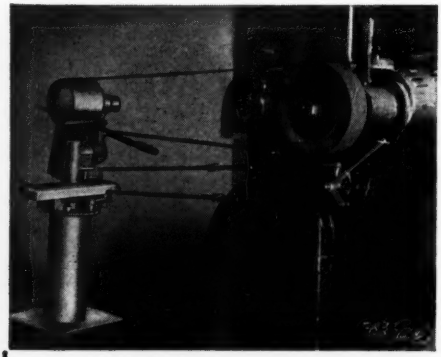
of the meter make it convenient to carry.

As a continuous indicator employed directly on processing operations, the meter can be suspended over a vat or tank, hung from a rack or mounted on a wall. On such processing applications, it can be used directly in grounded solutions since the glass electrode is completely shielded; extra-length lead wires can be furnished to permit the use of electrodes at any distance from the meter.

The Cambridge Industrial Model Direct-Reading pH meter can be operated from any 110-volt, 50 or 60-cycle a.c. outlet; a voltage-regulator provides for the correction of fluctuations from 100 to 130 volts. High stability is said to be obtained through an improved design of the electronic circuit and galvanometer. Compensation is automatic for variations from 0 to 100 deg. C. in solution temperature and for changes in room temperature. The clear scale is set at angle on the top of the metal case so that pH values can be read at a glance. Accuracy is claimed to be 0.10 pH over the instrument's full range of 0 to 14 pH.

## Masters Anti-Acid Lubricant

An anti-acid lubricant which, when thoroughly worked into the fibers of a pump packing, is said to prolong the useful life of the packing has been added

**DUAL REMOTE CONTROL***

**MAKES THE**

**NIEDERST**

**Back Stand Idler**

***— the most versatile in the field!***

***Remote Control for Operation Ease**—idler pulley arm swings on a turret enclosing angular adjustment mechanism. Levers conveniently located on lathe allow control of both angular and wide range of lateral adjustments from operator's normal working position.

**DATA:** Easily reversible to R.H. or L.H.; 5" side adjustment on Needle Bearings with Remote Control; Hydraulic Shock Absorber lowers weight slowly; easily tracks ¾" to 6" belts from Remote Control; Large Bearings Mounted in Arm for Lower Bearing Speeds, sealed for life with Non-Friction Grease Seals; Large Belt Length Adjustment; Counter Weighted for Steady Accurate Pressures.

**A host of other innovations** achieved by the NIEDERST BACK STAND POLISHER, have earned it the title of "World's Workingest Idler." For better, faster, smoother abrasive belt polishing — *investigate NIEDERST now!*

**NIEDERST COMPANY**

**3506 S. MICHIGAN AVE., CHICAGO 15, ILL.**

to the line of Masters products offered by James K. Harbinson & Co., Inc., 408 Root Bldg., 70 W. Chippewa St., Buffalo 2, N. Y. The lubricant can be injected into the lantern ring using a grease cup in the usual manner, and is claimed to effectively prevent seepage of acid into the working parts of pumps and handling equipment.

According to the manufacturer, Masters Anti-Acid Lubricant can be readily applied as a coating or film to all metal surfaces and provides positive protection against direct acidic attack or from the corrosive action of vapors. If the can is placed in boiling water for several minutes, the compound will liquefy and can be brushed on metal surfaces of extended area. The lubricant is said to be unaffected by inorganic (mineral) acids, mild caustics, and so on.

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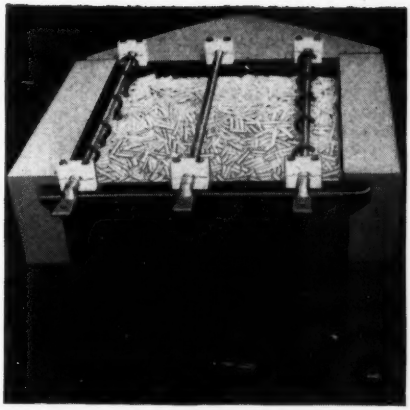
## H-VW-M Chrome Spray Floats

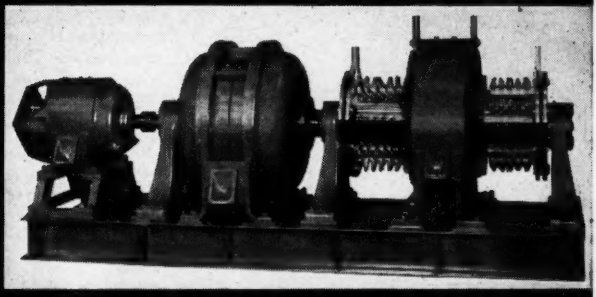
In order to minimize chromic acid loss, reduce heat waste, and help protect workers, the Hanson-Van Winkle-Munning Co., Matawan, N. J., has developed chrome spray floats for use in chromium plating tanks. The floats are laid on the solution to a thickness of 1 inch, forming a blanket which is said to reduce the escaping of spray to a minimum. In addition, the floats help to keep the heat inside the tank, thus conserving the supply of chromic acid. Moreover, the floats



Plating tank utilizing H-VW-M Chrome Spray Floats


COLUMBIA MOTOR GENERATORS

for Electroplating and other Electrolytic Processes



Columbia Generators embody every feature essential for dependable, 24-hour operation. They are built for electroplating service in sizes of 6 to 20 volts, 500 to 20,000 amperes, for anodic treatment of aluminum in sizes of 40, 50, and 60 volts, 500 to 3,000 amperes. Columbia Generators for other electrolytic processes range from ½ to 250 KW, 100 to 40,000 amperes, 6 to 60 volts. Write for full information.

COLUMBIA ELECTRIC MFG. CO.

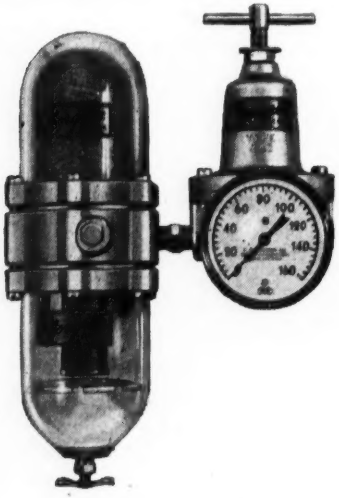
4519 HAMILTON AVE., N.E. CLEVELAND 14, OHIO

are described as an effective auxiliary to ventilating systems.

The H-VW-M Chrome Spray Floats are yellow polystyrene tubes 2¾ inches long which are completely enclosed and are designed to float on the surface of the solution. Approximately ½ lb. per square foot of solution surface area is required. According to the manufacturer, the floats are practically indestructible and can be used indefinitely. Moreover, they do not adhere to or interfere with the work in the tank, it is claimed.

## "Puraire" Regulator Unit

Intended to improve paint and lacquer spray room operations and to reduce



"Puraire" Regulator Unit

"moisture blemish" rejects by eliminating air-borne oil emulsion, moisture, and solids, a combination purifier and standard pressure regulator with gage, to be known as the "Puraire," is announced by the C. A. Norgren Co., 222 Santa Fe Drive, Denver 9, Colo. The unit is divided into two chambers, a lower chamber which contains a double Monel wire screen and baffle plate and an upper chamber which contains a blue yarn absorbent element.

Moisture is separated from the air in the lower chamber by centrifugal force. The moisture collects on the sides of the bowl and runs down below the baffle plate where it accumulates and can be drained off instead of being driven along with the air. The Monel wire screen stops dust, dirt, and pipe scale. The blue yarn absorbent element in the upper chamber turns pink when moisture gets past the filter, thus indicating to the operator that the lower filter bowl needs to be drained of accumulated muck and water.

The Puraire, which is offered in a ¼-inch size only, is designed to serve two spray guns operating simultaneously and is said to function with minimum pressure drop at the gun.

## Optimus No. 101A Metal Cleaner

Designated as the No. 101A, a metal cleaning compound especially designed for the cleaning of aluminum has been announced by the Optimus Detergents Co., 140 Water St., Matawan, N. J. Described as a balanced blend, medium duty alkaline cleaner, including special water softening materials and inhibitors to prevent attack on the metal, the compound is said to be particularly effective for removing dirt, grease, and oil. It can also be used as a soak cleaner for ferrous metals other than aluminum such as die castings, brass, bronze, pewter, and so on. In this application, the work can be made the cathode and cleaned electrically. With aluminum, the electrocleaning application does not apply.

Optimus No. 101A Cleaner includes a synthetic wetting agent and is said to be ideal for hot tank applications. A very mild, non-etching type of cleaner, it can be used in small concentrations at a temperature between 140 and 180 deg. F. A similar material and a companion product, Optimus No. 101, is applicable for machine washing operations where the presence of foaming is undesirable. These materials are available in 100 and 400-lb. containers.

## "Redmont" Rubber-Coated Glove

A bright red band around the edge of the cuff is the distinguishing mark of the "Redmont" Rubber-Coated Glove now being offered by the Edmont Manufacturing Co., Coshocton, Ohio. Emphasing new safety features and other achieve-

ments in construction, the red band also indicates that the cuff can be turned back to prevent run-back of fluids when hands are held upward.

The wide thumb span and long palm of the glove are designed to provide hand

"Redmont" Rubber-Coated Gloves

freedom without binding. A high-tensile fabric to which the rubber coating is thoroughly bonded, providing for increased flexibility, firm grip, and maximum hand comfort, along with curved thumb and fingers, are other features of the glove. An improved rubber coating that is said to be oil, grease, acid, and caustic-resistant makes the glove especially suitable for workers handling liquids or harmful materials. The glove is said to resist rips and tears and, it is claimed, will not snag when handling rough or sharp objects.

The Redmont Rubber-Coated Glove is available in three gauntlet lengths (10-inch safety cuff, 12 and 14-inch overall lengths) and also in a standard knit wrist style.

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## Arco Rubber-Covered Material Handling Screen

A woven wire screen of expanded or perforated metal in all mesh and sizes with complete rubber covering is announced as available for material handling purposes by the Automotive Rubber Co., Inc., 8607 Epworth Blvd., Detroit 4, Mich. The primary purpose of the screen is to protect by rubber cushion parts which have been painted, plated, or precision finished so that they will not become scratched, marred, or disfigured by contact with metal surfaces. The screen likewise permits drainage.

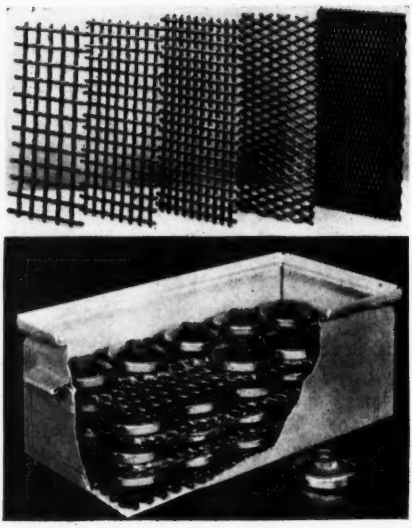
The Arco Rubber-Covered Material


*Grainlock*
*Polishing Wheel Cement*

We Do Not Send Samples
Better Still, We Bring Them To You
Your Job Is Set Up To Your Entire Satisfaction
You Cannot Beat This Offer or The Results Obtained

*Write Us Today*

**INDUSTRIAL LUBRICANTS COMPANY**
**5736 TWELFTH STREET** **DETROIT 8, MICHIGAN**



(Above) Several different meshes of Arco Rubber-Covered Material Handling Screen (Below) Arco Rubber - Insulated Material Handling Screens used as separators in a tote pan

Handling Screen can be furnished in any size to fit the bottoms of tote pans, conveyor baskets or pallets and can be covered with hard, semi-hard, or soft natural rubber or synthetic rubber to meet specific conditions. The screen can also be used as a separator in the palletizing and stacking of parts. In such applications, rack tipping and skidding of the tiers are claimed to be reduced.

## Miccrostop Stop-Off Lacquer

Fine hairline demarcation in masking parts prior to selective plating is now said to be possible for the plating industry through use of Miccrostop, a stop-off lacquer developed by the Michigan Chrome and Chemical Co., 6340 E. Jefferson Ave., Detroit 7, Mich. According to the manufacturer, Miccrostop is made from new synthetic resins and has adhesive qualities that hold to a fine degree of accuracy through boiling cleaners, acid rinses, and all selective plating cycles. It can be applied by the brush, dip, or spray method, and is easily removed after plating.

Miccrostop, it is claimed, has good dielectric strength, resulting in hairline demarcation with no loss of current. It is said to eliminate the possibility of a lacquer etch on precision-lapped finishes, and possesses rapid air-drying qualities, reducing drying time between coats and in preparation for racking. Absolutely neutral, the material, it is stated, will not contaminate any plating solution, and can be used through all plating cycles, including high-speed copper, decorative chrome, phosphate coatings, alloy solutions, zinc, tin, gold, silver, nickel, cadmium, gold on silver, or silver on gold.

## Surety Patch Type Glove

The Surety Rubber Co., Carrollton, Ohio, is now introducing a glove designed to solve the hand protection problem in industries where both adequate protection and sure-gripping are required of a glove. This Du Pont Neoprene patch type glove includes corrugated patches on the palm, thumb, and fingers to provide positive gripping action in key spots. The patches extend over the ends of the fingers to guard fully against slippage and to provide double thickness at points of greatest stress. Made of the same material as the glove, the patches are uncured when first attached and are cured along with the glove itself to ensure permanent adhesion.

The Surety Patch Type is available in Sizes 10 and 11 and is black in color.

Surety Patch Type Gloves

## "Alodizing" Process

A process for corrosion-proofing and anchoring paint to aluminum, to be known as "Alodizing," is announced by the American Chemical Paint Co., Ambler, Pa. The process is essentially a chemical one, requiring no electric for its operation, and can be used advantageously for protection against corrosion, both on painted and unpainted aluminum. With the process, a thin, tough skin positively integrated with the metal is said to be formed by the interaction of aluminum and the "Alodine" chemicals. Outstanding characteristics of this skin are its stability, flexibility, and adherence which are said to enable it to withstand all manner of shocks caused by bending and denting.

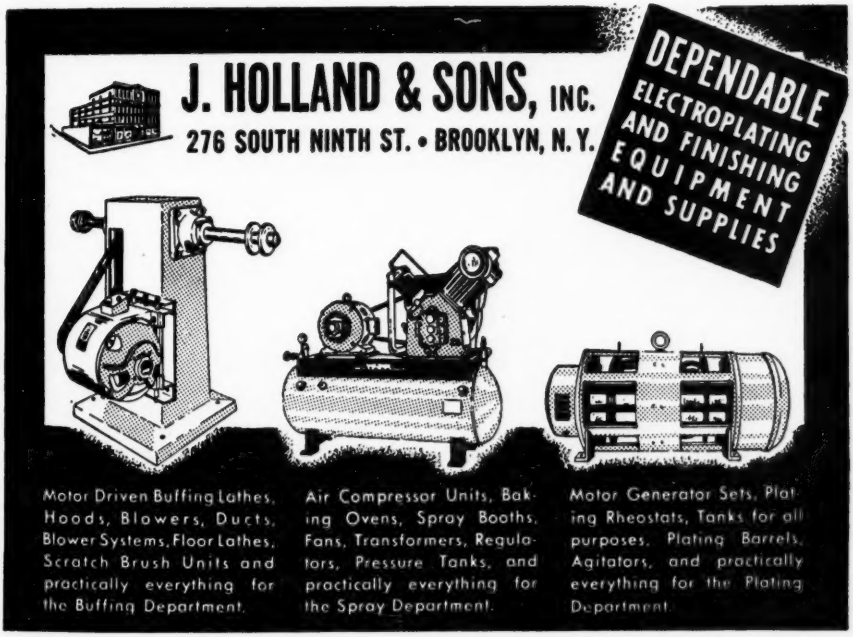
Aluminum to be Alodized is treated for two minutes or less in a chemical solution heated to a temperature not higher than 120 deg. F. The work is then dried if it is to be exposed unpainted, or rinsed if it is to be painted or waxed.

The Alodizing process has a variety of possible applications, including the treatment of aluminum awnings, aircraft and aircraft parts, truck panels, metal tiles, venetian blind slats, outboard motors, and so on. Depending upon production requirements, Alodine can be applied in either a spray or immersion process to parts or continuous strip.

## Acme Liquid Tripoli Composition

The Hanson-Van Winkle-Munning Co., Matawan, N. J., announces the availability of Acme Liquid Tripoli Composition in four grades designated as the Nos. 2-L-70, 2-L-75, 2-L-77, and 2-L-79. The company also announces that it has entered into an agreement with the Eclipse Air Brush Company for the distribution of its equipment for the application of the liquid tripoli composition and is therefore prepared to supply complete installation and service. Acme Liquid Tripoli Composition, however, can be used with any approved type of spray equipment.

Grade 2-L-70 is said to clean very readily and to provide for excellent cutting qualities, unusually high color, and good buff adherence. Grade 2-L-75 is claimed to provide for unusually high cutting qualities, buff adherence, moderate coloring properties, and good cleaning qualities. Grade 2-L-77 is said to afford good cutting qualities with medium color, and Grade 2-L-79, heavy cutting qualities with medium color.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DEPENDABLE
ELECTROPLATING
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Motor Driven Buffing Lathes, Hoods, Blowers, Ducts, Blower Systems, Floor Lathes, Scratch Brush Units and practically everything for the Buffing Department.
Air Compressor Units, Baking Ovens, Spray Booths, Fans, Transformers, Regulators, Pressure Tanks, and practically everything for the Spray Department.
Motor Generator Sets, Plating Rheostats, Tanks for all purposes, Plating Barrels, Agitators, and practically everything for the Plating Department.

## New Literature

**Modern Plastics Encyclopedia.** 1947 edition. Published by Plastics Catalogue Corp., 122 E. 42nd St., New York 17, N. Y. 1,556 pages, illustrated with drawings, photographs, and charts. Three volumes, 9 x 12 inches. Price, $8.50, U.S.A.; Canada, $11.00 (including postage and duty); foreign, $12.00.

Published in three volumes and comprising 1,556 pages, 720 pages of which are editorial material accompanied by 899 illustrations, exclusive of the ten charts in Volume III, this eleventh edition of "Modern Plastics Encyclopedia" contains complete information on plastic materials, their processing, and their applications. The introductory pages alone reflect how extensively plastics are being used in everyday products, such as aircraft, automobile, and train interiors; tools; electrical supplies; textile machinery; chemical plant equipment for industry; furnishings; lighting; refrigeration; appliances; housewares; textiles; toys; surgical supplies; displays; and packaging.

Volume I provides an authentic reference to the most recent developments and applications for all types of materials, coatings, films, fibers, fabrics, laminates, and resin-woods. Included for the first time is a selected bibliography on German plastics.

Volume II is devoted to processing problems. Engineering design, construction design, molding, extruding, casting, fabricating, finishing, and assembly are all thoroughly covered. Latest developments in machinery are described, plant layouts are suggested, and molding plant and toolroom equipment is discussed. The complete directories of the plastics industry are also included in this volume. Available separately for $1.00, the directory section lists names and addresses of material and chemical manufacturers, machinery manufacturers, molders, and laminators, including trade marks; motion pictures on plastics and educational courses; trade associations; molders' and fabricators' marks; and personnel of the firms in the plastics industry.

Volume III is devoted entirely to ten special charts to facilitate reference and handling. Two entirely new charts are provided on laminating resins and properties of synthetic fibers. Charts on plastics identification, chemical formulas, plasticizers, plastic properties, solvents, adhesives, coatings, and synthetic rubber properties have all been brought up to date. Volume III, or the complete set of charts, is available separately for $3.75.

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**Oakite Soluble and Special Protective Oils.** Oakite Products, Inc., 120 Thames St., New York 6, N. Y., is now offering free copies of two informative, illustrated booklets providing helpful data on coolants and rust preventatives. One of the booklets discusses fully the applications of Oakite Soluble Oil and Oakite addition agents for meeting unusual or special machining problems on a wide range of work, providing starting point formulas for making up coolant emulsions for operations on steel, brass, aluminum, plastics, and so on. The other booklet provides helpful data on the temporary or semi-permanent rust protection of ferrous parts or work with Oakite Special Protective Oil, following such operations as pickling, tumbling, sandblasting, and so on.

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**"You Can Get Them All at Pyrene"** is the title of a four-page folder listing diversified metal finishes and processes available on either a job or contract basis which is now being distributed by the Metal Finishing Div., Pyrene Manufacturing Co., 560 Belmont Ave., Newark 8, N. J. Finishes and processes covered include Alumilite; plating on aluminum; Bonderite; cadmium plating (Udylite); copper, chromium and hard chromium plating; Cronak; enameling; Iridite; lacquering; lead plating; special chemical treatments for magnesium; Pyrene Bright Nickel; Parco Lubrizing; Parkerizing; polishing; Pylumin; Pyron; sandblasting; special electrolytic and chemical finishes; and tin and zinc plating. Copy free upon request.


**ALLWOOD**

***"Vienna Brand" Lime***

Made from Limestone that is identical in chemical analysis and geological structure with European Imported Lime. Tests show a "lime cake" made from Allwood "Vienna Brand" Lime equals the finish made from imported lime.

*WRITE FOR FULL PARTICULARS*

**ALLWOOD LIME COMPANY**

Manitowoc • Wisconsin

**Finishes for Aluminum (Sections One and Two).** Published by Reynolds Metals Co., Dept. 27, 2500 S. Third St., Louisville 1, Ky. Price, $2.00.

Aluminum offers many valuable and interesting combinations of surface finishes for enhancing its appearance. To indicate some of the important possibilities, Reynolds Metals has now published "Finishes for Aluminum" in two volumes.

The first volume, Section One, is wire bound and contains 108 pages devoted to 8 cleaning treatments, 17 mechanical surface finishes, 15 chemical surface finishes, 11 electrolytic oxide treatments, 12 electroplated coatings, 7 paint application methods, 7 paint coatings, ceramic coatings (vitreous enamels), and special finishes such as silk screen and sprayed metal finishes. It concludes with a discussion of various controls and tests for finishes.

The second volume, Section Two, supplements the information contained in the first volume with 120 pages of shop data on materials, equipment, solution preparation, procedure, and control for more than 30 of the most widely used finishing processes. This volume is supplied in a separate loose-leaf binder, and new and revised bulletins will be issued at intervals to keep the information up-to-date.

"Finishes for Aluminum" (two volumes) offers users of aluminum an effective means of keeping up with the many advances being made in this particular phase of aluminum processing.

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**Durco Steam Jets.** An eight-page bulletin published by The Duriron Co., Inc., Dayton 1, Ohio, provides a complete description of Durco Corrosion-Resistant Steam Jets and includes engineering information on the application, installation, and operation. The bulletin describes the special Durco alloys of construction which enable the jets to heat, agitate, and circulate corrosive solutions safely. A chart is included which enables the reader to easily calculate the proper size jet and steam consumption. Complete data on sizes and capacities, dimension drawings, and a section on how to install and operate steam jets are included in the bulletin. Information on steam fittings and scouring plates is also provided. Copy of Bulletin 1804 is available free upon request.


An "Individualized" NUKEM Acid Proof Floor Will Withstand Any Corrosive Condition

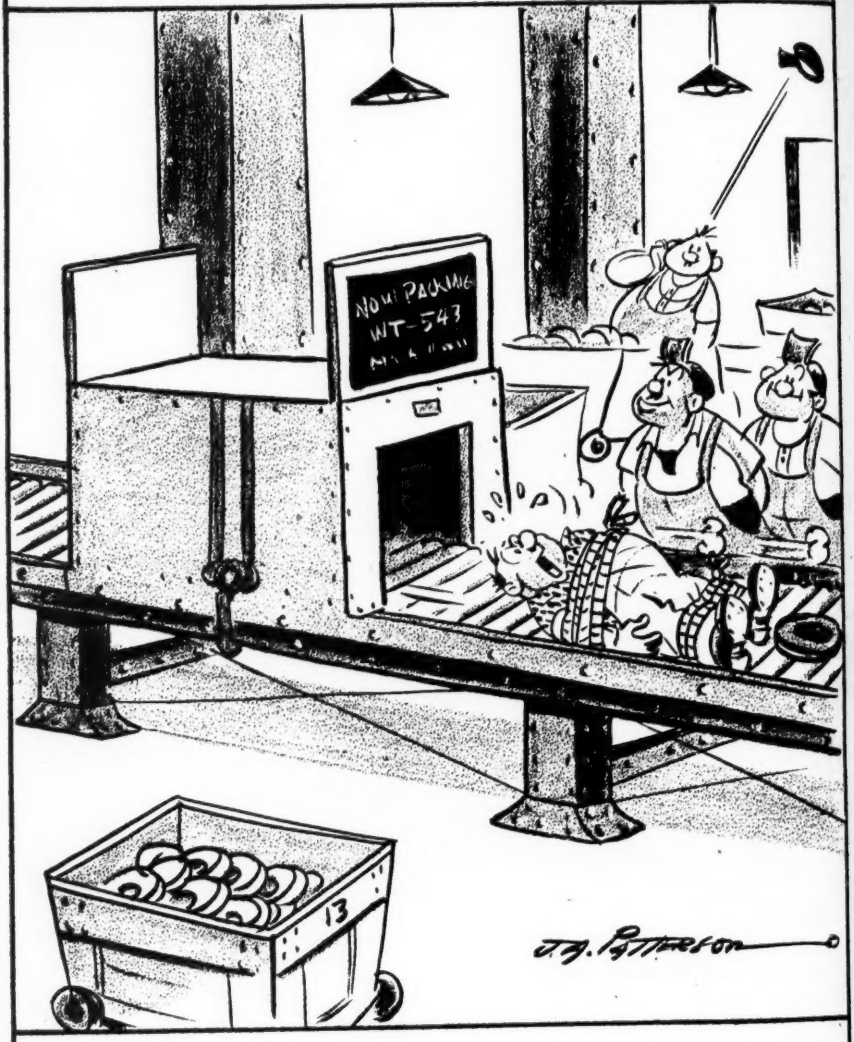
Several types of construction are used in NUKEM Floors to meet varying conditions. Regardless of the requirements in your plant, one of the various types of NUKEM floors will give you the long, trouble-free service you want.

Acids, alkalies, solvents, wear have no effect on a NUKEM floor built to meet an individual plant problem. While somewhat higher in first cost, NUKEM floors make up the difference many times over through longer life and savings on repairs and maintenance.

Ask to have a NUKEM representative submit recommendations. Or write for new bulletin on NUKEM acid-proof floors.

NUKEM Products CORPORATION
121 Colgate Ave., Buffalo 20, N.Y.

*The Finishing Touch* — **By J. A. Patterson**




***"Okay, okay! You guys win — Lemme up and I'll give you th' dame's telephone number."***